

# Murray Falls

## *Site Level Data Report*

### *2001/2002*



Joan M Bentrupperbäumer



Rainforest CRC

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For this research:

- |   |       |
|---|-------|
| ▪ James Cook University Ethics Approval No.               | H1272 |
| ▪ Queensland National Parks & Wildlife Service Permit No. | FNQ06 |
| ▪ Wet Tropics Management Authority Contract No.           | 654   |

# Terms of Reference

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## Visitor Use Survey

The following Terms of Reference have been extracted directly from the WTMA/Rainforest CRC Contract document.

### Background

Measurement of visitation to the WTWHA extends far beyond the estimation of visitor numbers. The collection of basic visitor numbers provides baseline information only. Further visitor specific information is required to provide managers with an understanding of patterns of visitor use, behaviour, perceptions, attitudes, expectations and satisfaction. A comprehensive understanding of these visitor aspects is critical to effective visitor management including minimisation of biophysical impacts and maximising benefits to the land manager, visitor and community.

WTMA commissioned Manidis Roberts Consultants in 1993 to conduct an extensive visitor survey with the aim of providing baseline information for comparison with future visitor use surveys. The Manidis Roberts 1993/1994 visitor survey was conducted over 56 sites and although not comprehensive provided an important first step in visitor monitoring within the WTWHA. The MR survey approach include 3 key elements:

- traffic counts
- site observations
- visitor interviews

A number of subsequent visitor use surveys have taken place throughout the WTWHA, and although they have not taken place in as many sites as the Manidis Roberts 1993/1994 survey, they have been far more comprehensive and complex in order to investigate the variety and complexity of issues identified by management agencies.

### Aims:

- To collect, compare and review site-based visitor information against previous survey exercises, including aspects of the MR survey
- To update WTMA's visitor survey system to achieve improved administrative efficiency and capture of key site-based visitor information which will aid land managers and the tourism industry in making informed management decisions
- To contribute to measuring psychosocial indicators for State of Wet Tropics reporting processes
- To provide an integral input or tool for the 'Visitor Monitoring System (VMS) for the Wet Tropics World Heritage Area', a project which is also being undertaken by Rainforest CRC during 2001 to 2002.

(Ref: *WTMA Contract # 654 , 2001*)

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## About the Author

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Dr Joan M Bentrupperbäumer is a Senior Research Fellow and Project Leader with the Rainforest CRC and Lecturer at TESAG and the School of Psychology, James Cook University, Cairns. Her research interests include human-natural environment transactions using social, psychological and biophysical perspectives. Her research approach incorporates an interdisciplinary perspective on reciprocal relationships indigenous and non indigenous people have with the natural/built/social/cultural environment in the WTWHA and the implications of such relationships for environmental management, tourism and local communities in the region. A particular emphasis in the research is placed on the 'real world' application of results in terms of planning for, managing, monitoring and reporting on the State of the Wet Tropics, and developing practical mechanisms and strategies to mitigate impacts on those features of the WTWHA inherent to its World Heritage status.

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## Acknowledgments

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The success of this research project, which was undertaken across ten sites within the Wet Tropics World Heritage Area, has very much depended on the many people involved in various research related tasks. In particular I would like to acknowledge my colleague Dr Joseph Reser who has worked together with me over a number of years now developing and refining the analytical framework, survey instruments, and methodologies for this multidisciplinary research on impacts of visitation and use in protected areas. Together we have finalised a report which brings together the results from the ten site level reports, and discusses in detail the analytical framework, methodologies and procedures which were used to undertake this research (Bentrupperbäumer & Reser, 2002a). I would also like to specially acknowledge my research assistant Sue-Ellen O'Farrell who has made a major contribution to this research by assisting me in every aspect of the administration of the project.

In addition I wish to acknowledge all of those listed below who were involved in various aspects of this research.

### *A. Data Processors*

Bronwyn Guy, Joshua Guy, Charmayne Paul, Sue-Ellen O'Farrell, Lucas Talbot, Sunny Pegararo and Jenny Butler.

### *B. Field Assistants across the region*

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### *C. Field Assistants at Murray Falls*

Ben Trupperbäumer (Field Supervisor), Paula Gilbard, Sunny Pegoraro.  
Rik Morgan (Traffic Counter)

### *D. Research Colleagues*

Dr. Robyn Wilson, Assoc. Prof. Steve Turton and Dr Miriam Goosem

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### *F. DNR/QPWS Personnel*

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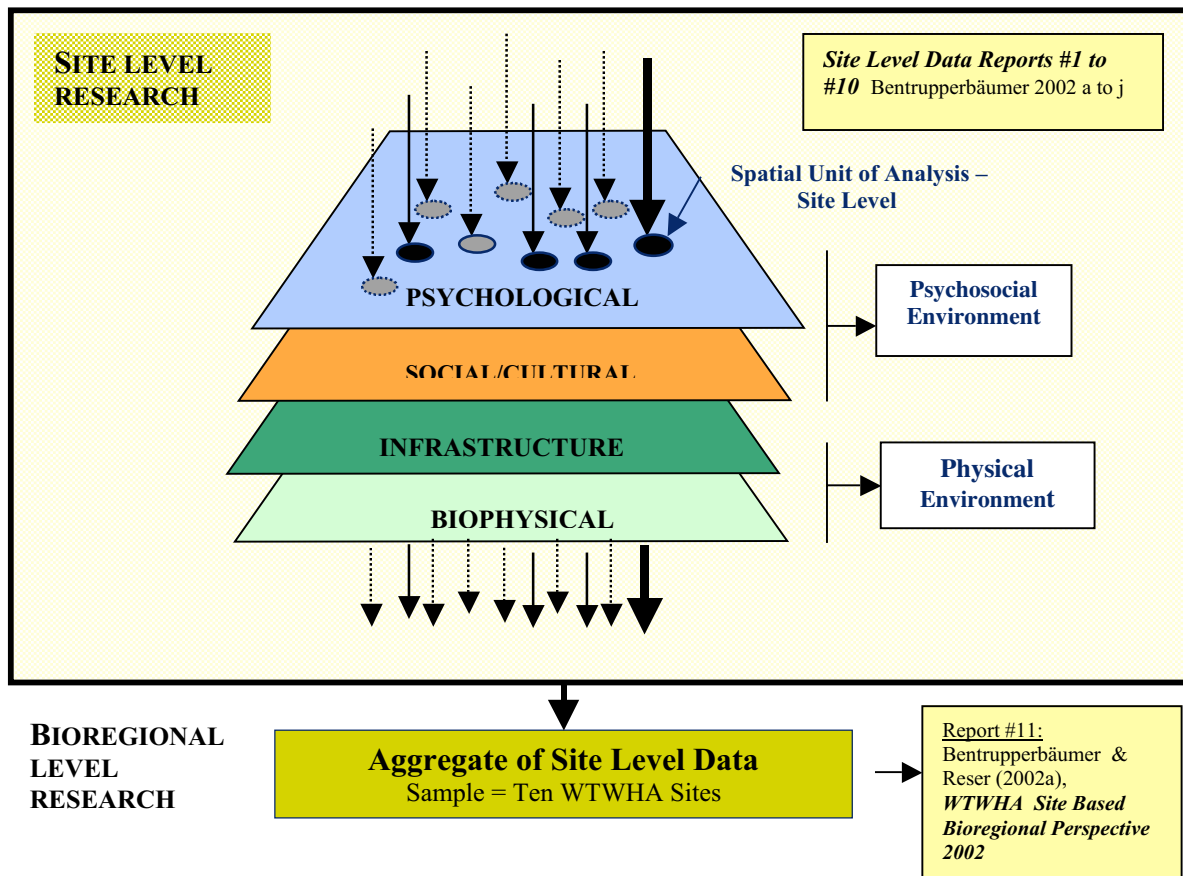
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## This Research

Natural resource managers are increasingly aware that the real issue and challenge for them is people management. In a protected area context this requires an informed understanding of the nature and quality of the interaction between people and environment. The multilayered and multidisciplinary site-level approach applied in this research is one that provides such an understanding and has evolved from, built upon and refined earlier research endeavours (Bentrupperbäumer & Reser 2000). The conceptual and methodological framework which assesses and documents this interactive process and which was applied in this research is outlined in Figure 1. This framework differentiates between four primary research layers or domains, one for each of the four key site-level 'environments' within the setting: *social and psychological* (psychosocial), *natural and built* (physical) (Reser & Bentrupperbäumer, 2001). Research projects representative of each of these 'environments' were conducted simultaneously at the site, which provided a comprehensive and realistic context for measuring, monitoring and reporting on the *impacts* of visitation and use at recreational settings in the Wet Tropics World Heritage Area.

From a management perspective, this site-level research approach provides specific site and situation level data which can directly inform site level decision-making and practice, as well as monitoring and reporting (see Site Level Reports #1 to #10, Bentrupperbäumer 2002 a to j). In addition, this site-level sampling allows for an accurate and meaningful aggregate picture of what is happening at a bioregional or World Heritage Area level, as long as data collection sites and data collection are representative (see Report #11, Bentrupperbäumer & Reser 2002a, *WTWHA Site-Based Bioregional Perspective 2002*). Given that reporting on the State of the Wet Tropics is a statutory requirement, the standardised conceptual and methodological framework used across the ten WTWHA sites and the subsequent information provided by research such as this is critical for continued monitoring and reporting change over time.

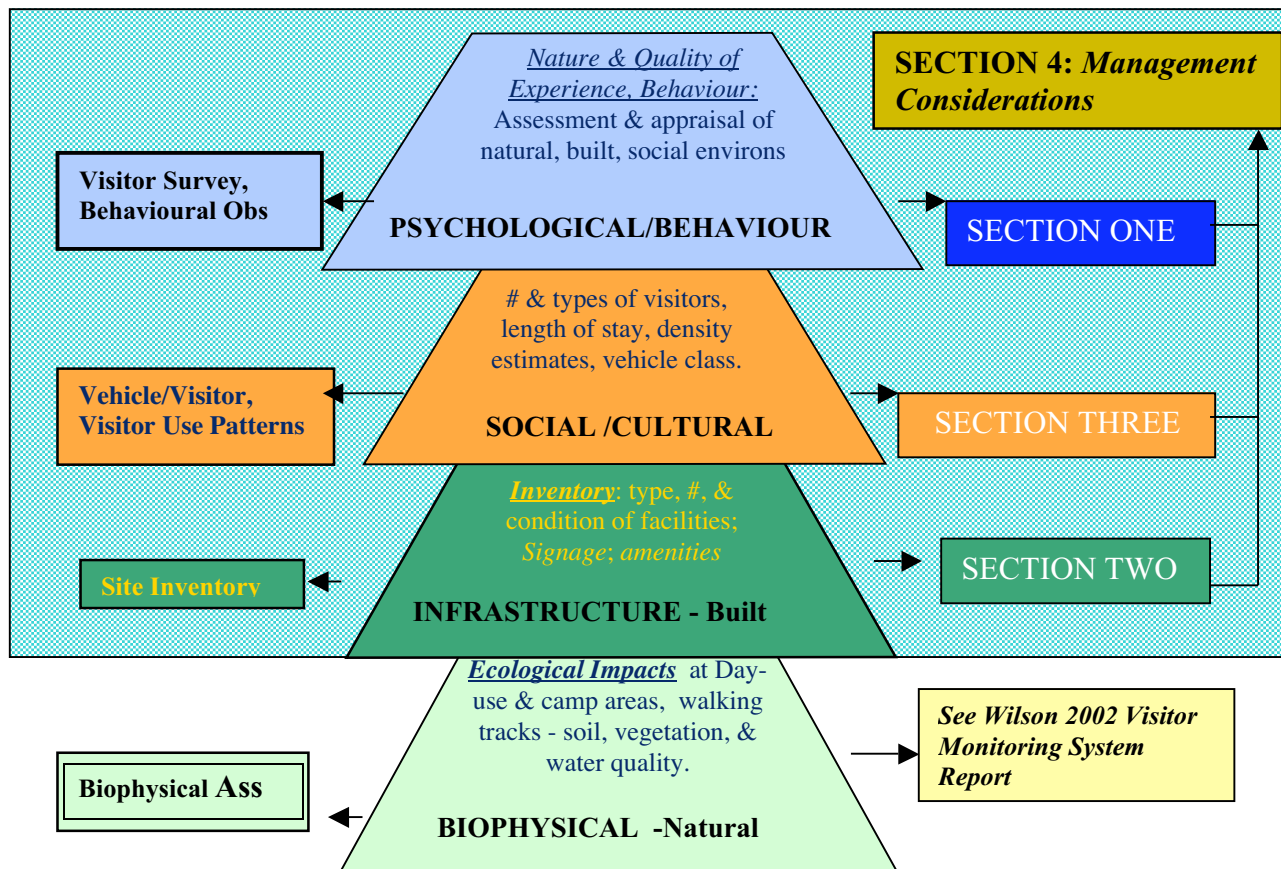


**Figure 1:** Diagrammatic representation of the research layers, domains and report outputs for this research .

# This Report

This report is one of ten site-level reports which presents a comprehensive set of data analyses for the strategic sample of research tasks undertaken across three of the four research domains outlined in Figure 1. The research covered in this report was undertaken at the Queensland Parks & Wildlife Service and Wet Tropics World Heritage site, *Murray Falls*, during 2001 and 2002. Since the primary objective of this report is to provide key site-level data of relevance to all levels of management, from on-ground to policy, planning, monitoring and reporting, details of methodology are not included here. This information is available in a separate but accompanying report (Report #11, Bentrupperbäumer & Reser, 2002a). When *comparative data* from previous studies are available they are included in each relevant section. When such data is from studies other than the authors, methodology and specific measures are often different. The layout of this report, which complements the research domains presented in Figure 1, is outlined in Figure 2 and the discussion that follows.

## SITE LEVEL REPORT



**Figure 2:** Diagrammatic representation of the report layout and report sections.

The layout of this report is in four sections. The first three sections present data which reflect the strategic sampling across three research domains, while the fourth section addresses key management considerations. The data in this report is presented in some considerable detail the purpose of which is to allow for the identification in future monitoring of changes in the system, however subtle. It also provides management agencies with the detail required for State of Environment reporting and planning, policy and on-ground management decision making.

## Data Sections

### Section 1: *Psychological and Behavioural*

In the first section, general descriptive analyses of the two stages of data collection undertaken at this site in September, 2001 and April, 2002, are presented. Data collected includes:

- a) *visitor survey* provides information on visitor profile, reasons for visiting, appraisal of the natural, built, social environment, and signage, visitor activity, prior information sources used, experience and satisfaction. Comparable survey items from Manidis Roberts (1993/1994) are also included.
- b) *behavioural observations*, and
- c) *general comments* by visitors, field assistants and field supervisors.

### Section 2: *Infrastructure/Built Environment*

The second section presents an *inventory of site facilities and infrastructure*, including all *signage*, which was undertaken by the author during the same data collection periods. An inventory from previous research (Bentrupperbäumer & Reser 2000) is included for comparison as is signage information from SitePlan (1993).

### Section 3: *Social Setting/Visitor Use Patterns*

The third section presents information on the social setting of the site including visitor use patterns. While the research undertaken in this section does not encompass the full meaning of *social*, the information nevertheless provides an overview of visitor use patterns including number and type of visitors accessing the site, length of stay at the site, pattern of use over time, vehicle type, etc. This information was obtained and is presented in two ways.

- a) The first is observer-based information which outlines vehicle and visitor data obtained over 4 x 8 hour observation periods during September 2001 and April 2002.
- b) The second is instrument-based information obtained from the traffic counter which provides monthly, weekly, daily records of vehicle numbers, and visitor numbers calculated from visitor counts in vehicles and Questionnaire item # 8 in the visitor survey. The traffic counter was installed for a continuous period of 12 months from mid September 2001. Traffic counter data from Manidis Roberts (1993/1994), the WTMA Traffic Counter Program (1993-1997), and Bentrupperbäumer & Reser (2000) are included for comparison.

## Integrative Section

### Section 4: *Management Considerations*

The fourth section of this report addresses management considerations that have emerged through the integration of data across the above three research domains. These considerations cover topics such as: presentation, protection, opportunities, problems and issues, threatening processes, layout and design, infrastructure and facilities.



## Site Location & Description

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**M**urray Falls is situated in the Murray Upper region, approximately 38km southwest of Tully. Murray Falls occurs in the southern end of the Australia's Wet Tropics World Heritage Area (WTWHA), which extends from Cooktown southwards to Paluma, encompassing an area of almost 900 000 hectares (Figure 3).

### Natural Environment

There are two distinct native vegetation types on the site; they are lowland tropical rainforest and sclerophyll forest. Soils on the site were formed from the underlying granite parent material. The site is located adjacent to the Murray River, which is the primary natural attraction at the site.

### Cultural Environment

Murray Falls is a culturally significant site for the local rainforest aboriginal people of the Jumbun community, the Girramay and Jirrbal. Interpretive signage located along the rainforest walking track to the top of Murray Falls details some of their traditional tools and implements, as well as a selection of their stories and myths. While a complete photographic record of these signs are included in Section 2, Page 58 of this report, care has been taken not to present photographs of those sites that may be culturally significant and hence sensitive for community members such as *Split Rock*. Over the course of this research project a meeting was held with the Chairperson of the Jumbun Community, Marcia Jerry, during which topics including: the research, the importance of the site to the community, the Aboriginal Interpretive signage, tourism, water quality, and community involvement in the project, were discussed. Informal discussions have also been held with a number of Elders in the community.

### Built Environment

The Murray Falls site caters for both day and overnight usage. The lower section of the site has been designed as a day use site, and provides visitors with the following facilities: car park area, access to swimming areas, rubbish bins, BBQs and tables and seating, and firewood. The upper section of the site allows for overnight usage by visitors, with the following facilities provided: car park area, a boardwalk and walking track, toilets, a shower, rubbish bins, BBQs and BBQ/fire pits, sheltered table and seating, and firewood (Figure 4).

### Opportunities

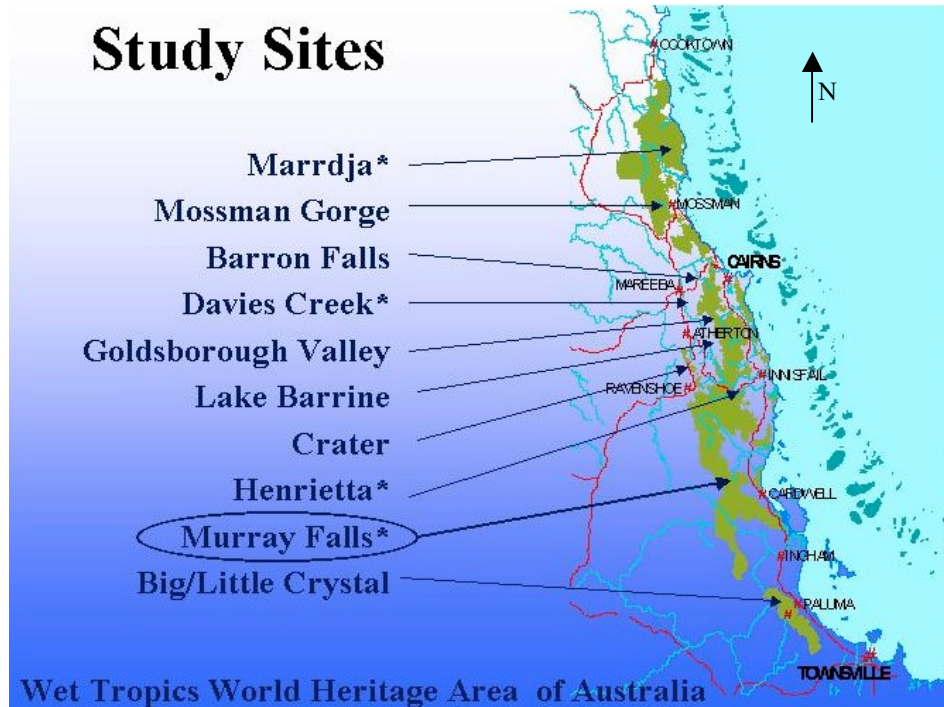
**Recreational** The main activity-based recreational opportunities available at this site are swimming, picnicking, camping, walking (see Section 1 for details). There are two walking tracks present, a boardwalk to the bottom of Murray Falls, which is classified as a *Pathway 1* (Wet Tropics Walking Strategy, 2001), and a trail through the forest to the top of Murray Falls, which is classified as a *Graded Track* (Wet Tropics Walking Strategy, 2001). The current status of the tracks is outlined in detail in Section 2. Visitor comments relevant to the track and infrastructure are presented in Section 1. Other recreational opportunities available include: photography and bird/wildlife watching.

**Experiential** In addition to the activity-based recreational opportunities outlined above, Murray Falls provides important experiential opportunity such as nature appreciation and experience including observing scenery and possible wildlife encounters, socialising with family and friends, rest and respite.

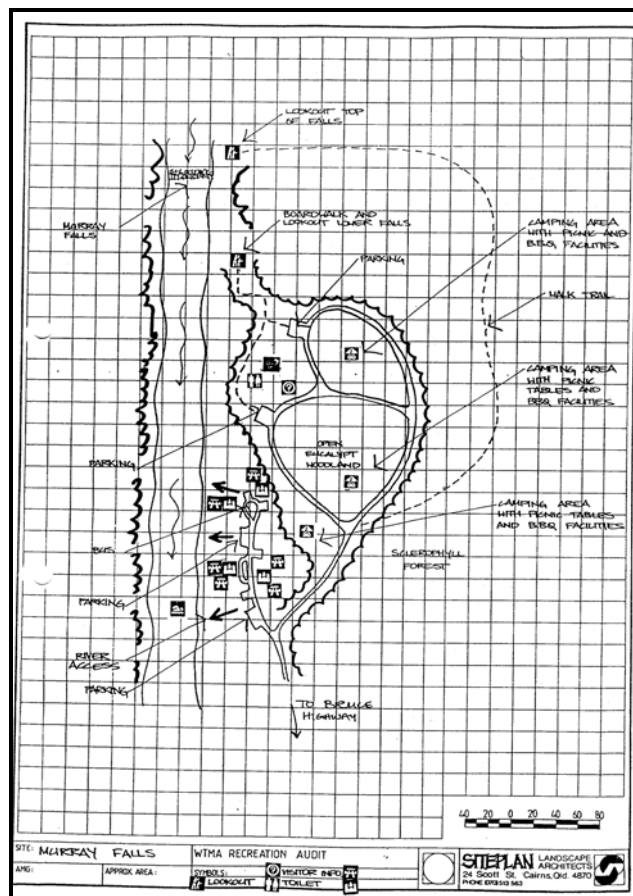
### Visitation

Compared to other sites in the Wet Tropics, Murray Falls experiences relatively low levels of visitation with 31,500 visitors per year (Mossman Gorge >400,000 visitors per year).

# Site Maps



**Figure 3:** Site location within the Wet Tropics World Heritage Area. (Source: WTMA, 2000)



**Figure 4:** Murray Falls site map. (Source: SitePlan Landscape Architects, 1993)

## Site Management

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The Department of Natural Resources (DNR Forestry) was initially responsible for the on-ground management and upkeep of the Murray Falls site. However, this responsibility has since been transferred to the Queensland Parks and Wildlife Service/Environmental Protection Agency (QPWS/EPA). During the course of this research project the on-the-ground management personnel were always notified prior to undertaking field work at the site. On a number of occasions this enabled the field teams to meet with rangers who provided us with critical information about visitor interactions, visitor behaviour, infrastructure development and problems, etc.

### Wet Tropics Management Authority

The Primary Goal for the Wet Tropics World Heritage Area is to implement Australia's international duty to *“protect, conserve, present, rehabilitate and transmit to future generations the Wet Tropics World Heritage Area, within the meaning of the World Heritage Convention.”*

#### Site Specific Management Intent

Murray Falls site is classified as a Zone D site by the WTMA's zoning scheme. This zoning system is based on a “distance from disturbance” model. The WTMA management intent for this zone type is described below:

*“To accommodate developed visitor facilities to enable visitors to appreciate and enjoy the Area. To ensure that the impact of visitor infrastructure is managed to minimize the effect on the integrity of the Area”* (Wet Tropics Management Authority, 1997 p.33).

In addition, the Wet Tropics Management Authority's (WTMA) Visitor Opportunity Class system describes Murray Falls site as a Visitor Facility Node (Class 4). The criteria for this category of site, as defined by the WTMA (1997 p.94), are detailed below:

- An area where a visitor may expect opportunities for presentation, intensive social interaction, and where management presence may be obvious;
- Accessible by vehicle along presentation roads;
- Having developed visitor facilities such as formal car parks, toilets, picnic facilities and camping areas;
- Providing access to a range of recreation opportunities;
- Having the potential for further development of visitor facilities.

# Executive Summary

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## Section One

### *Visitor Survey 2001 & 2002*

## Key Findings

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### Survey Analyses

- Murray Falls is an *important local use site*, particularly for those community residents from the *southern region* of the WTWHA. Many are *repeat visitors*.
- It is a site most frequently used by *young people* travelling in a *private* car.
- Most people get to know of Murray Falls by *word of mouth*. Very few visitors to Murray Falls use information centres.
- The primary reasons people visit Murray Falls are to *see the natural features* and to just *rest and relax*.
- Visitors are very impressed with the *natural features* of Murray Falls and the *condition and management* of these features.
- They are also very impressed with the *condition and maintenance* of the *facilities*, and find them both *appealing and adequate*.
- Most visitors stay for *two or more hours* and undertake the *short walk*.
- The vast majority of visitors *do not know* who manages Murray Falls.
- *Crowding* is not a concern for visitors at Murray Falls.
- Nevertheless, visitors clearly link *threats* to the well being of the environment at Murray Falls with *on-site visitor behaviour and overuse*.
- *Clean air and water and scenic beauty* are considered to be the most important *benefits* of the natural environment at Murray Falls.

### Comments

- The majority of comments reflected visitors' *positive feelings about the site*. The positive comments mainly focused on the *beauty of the site, the relaxation felt from the site, as well as value for money*, and on the *good facilities* and the *maintenance* of the site.
- Visitors also reported that they *liked being supplied with firewood* but needed smaller sizes.
- Visitors commented that they would not like to *see any changes or development to the site*.

### Behavioural Observations

- **Domestic Animals:** Despite signage stating that animals are prohibited, there were a number of sightings of domestic dogs at the site.
- **Deliberate damage to plants:** Adults and children were observed stripping back bark on many trees for kindling needed to make their own fire.
- **Undesignated area use:** Groups of people were swimming in undesignated (prohibited) areas at the site.



## Section Two:

### *Infrastructure Inventory and Profile*

## Key Findings

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### Day Use, Camp Area, Boardwalk and Walking Track

- Murray Falls contains four distinct activity nodes – *Day Use Area, Camping Area, Boardwalk, and Walking Track*.
- Within each of these nodes, *well developed infrastructure* has been established.
- On the whole this infrastructure was in *very good condition*, with *no evidence of vandalism or graffiti*.
- The site was also *very well maintained* with *little evidence of litter*.
- *Weed infestation* along edges of the Day Use, Camping Areas and Access Road was *high in some locations*.
- Compared with the previous site inventory (1999), there has been a *slight increase in infrastructure* in both the day use and camping areas, otherwise the condition of infrastructure and extent of weed infestation remain the same.

### Site Information and Signage

- Signs at Murray Falls were grouped into DNR's five broad sign categories: *interpretive, visitor orientation, visitor advice, regulatory, and corporate identity*.
- A total of *45 sign structures* containing *56 sets of information* were present at Murray Falls.
- In addition, another *15 sign structures* were located along the *main and access roads*.
- Signs were located in *each of the activity nodes* plus along the *main road* and *access road*.
- The majority of the signs were for the purpose of *visitor orientation*.
- The *interpretive signage* present focused on *Aboriginal cultural information*.
- *No foreign language signs* were present.



## Section Three:

### *Vehicle and Visitor Monitoring*

## Key Findings

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### Vehicle and Visitor Records

- Most common vehicle type accessing Murray Falls was the *car* (48%), followed by 4WD (27%).
- The highest number of people at the site at one time was **98** (1430 hours 6<sup>th</sup> April 2002).
- Most of the visits to Murray Falls occurred in the *afternoon*, between 1300 and 1700 hours – the busiest time.
- On average, people stayed at Murray Falls for **156 minutes** (one & half hours).
- One quarter of the visits was *two hours or longer*.

### Traffic Counter Data

- A total of **11,696 vehicles** and **31,462 people** visited Murray Falls between September 2001 and 2002.
- On average, **946 vehicles** and **2,545 people** visit this site *each month*, range 557 to 1,292 vehicles.
- *January* received the *highest visitation rates*, *February* the *lowest*.
- On average, **225 vehicles** and **605 people** visit Murray Falls *each week*, range 114 to 497 vehicles.
- *Daily* vehicle numbers range from **7 to 105**.
- Average *weekday* vehicle number was **28 per day**.
- Average *weekend* vehicle numbers was **41 per day**.



## Section Four

### *Management Considerations*

## Key Findings

### **Presentation**

- The presentation of Murray Falls as a World Heritage Area site is problematic as very few visitors are aware of its World Heritage Area status.
- Cultural attributes of the site are well presented in terms of interpretive signage but require active indigenous participation in management of the site and engagement with the visitors.
- Natural attributes are well presented in terms of appeal, condition and management and in demonstrating the interconnectedness with cultural attributes in the above interpretive signage.
- Management identity of the site is not well presented but responsibilities are in terms of visitor appraisal of the condition and management of the natural and built environment.
- Given the reliance on prior knowledge about the site and word of mouth, presentation of relevant and critical WHA and management information needs to occur at the site.
- Site layout and design, infrastructure and facilities are legible, functional, sensible, well managed and well used.

### **Opportunities**

- Murray Falls is providing for and facilitating activity-based recreational opportunities in a reasonable way.
- Experienced-based opportunities are very important for visitors and are also well accommodated for at this site.
- Increased local indigenous culture-based activities and experiences may be one way of further enhancing recreation, experience and educational opportunities at Murray Falls.

### **Specific Problems and Issues**

- Principal behaviour management problems relate to visitors engaging in risky activities and regulation violations which may require different risk and rule/regulation communication strategies.
- Use and user conflict, inappropriate behaviour and crowding and overuse are not currently substantial problems at Murray Falls despite visitors expressed concerns over such human-based threats to the well being of the environment.





# Section One

## *Visitor Survey 2001 & 2002*



# S E C T I O N O N E

- 
- Descriptive Analyses of Survey
  - Additional Comments on Survey
  - Comments to Field Assistants
  - Behavioural Observations
-

# Visitor Survey of the Wet Tropics Region in North Queensland Dry (Stage 1) and Wet (Stage 2) Season 2001/02


## GENERAL DESCRIPTIVE DATA ANALYSES

Survey Location:

**Murray Falls**

	Stage 1	Stage 2
<b>Survey Dates</b>	22 <sup>nd</sup> , 23 <sup>rd</sup> , 26th September 2001	4 <sup>th</sup> , 6 <sup>th</sup> & 7 <sup>th</sup> April 2000
<b>Survey Times</b>	0900 to 1700 each day	0830 to 1700 each day
<b>Weather</b>	62.1% Sunny 32.2% Overcast 3.4% Raining 1.1% Hot 1.1% Warm 0.0% Cool	21.7% Sunny 57.6% Overcast 19.6% Raining 0.0% Hot 1.1% Warm 0.0% Cool

This visitor survey was undertaken over two periods, September 2001 and April 2002. For clarity of presentation the data analysis/results corresponding to these data collection periods are represented in two colours, grey and green, and for the combined, dark red:

 **Stage 1: September 2001**

 **Stage 2: April 2002**

In addition, where comparative data is available from Manidis Roberts 1993 and 1994 data collection periods this is included in the relevant section and is represented in yellow.

 **Comparative Data** (*Manidis Roberts 1993/1994*)

- Primary data analysis for this section of the report has been undertaken by Bronwyn Guy, James Cook University.

## Questionnaire Profile

Because Murray Falls is a relatively low use site (31,500 visitors per year, Section 3) it was possible during the survey distribution period to approach every visitor to this site. The results are therefore representative of those using this site at this time.

### a) Questionnaire Type Distributed & Returned

The majority of questionnaires which made up this data set were completed on site. Just 5% were take-homes/mailed back.

	Stage 1: 2001		Stage 2: 2002		Combined	
	n	Percentage	n	Percentage	N	Percentage
On-Site	79	90.8%	91	98.9%	170	95%
Take-Home	8	9.2%	1	1.1%	9	5%
<b>Total</b>	<b>87</b>	<b>100%</b>	<b>92</b>	<b>100%</b>	<b>179</b>	<b>100%</b>

### b) Questionnaire Status of Returns

Of the **186** questionnaires returned 3.8% had to be rejected because they were either over 50% incomplete, respondents were too young, or they were posted back well after data entry and analysis had been completed.

	Stage 1: 2001		Stage 2: 2002		Combined	
	n	Percentage	n	n	N	Percentage
<b>Analysed:</b> Completed	87	100%	92	93%	179	96.2%
<b>Rejected:</b> Incomplete, under age, returned too late etc.	0	0	7	7%	7	3.8%
<b>Total</b>	<b>87</b>	<b>100%</b>	<b>99</b>	<b>100%</b>	<b>186</b>	<b>100%</b>

### c) Non-Response Information

Overall, the nonresponse rate was generally low. The main reason for why people who were approached would not participate in the survey was that they had **no time**. Field assistants found visitors on the whole to be very cooperative, interested in the research, and willing to participate.

Reasons	Stage 1: 2001		Stage 2: 2002		Combined	
	n	Percentage total # people approached (99)	n	Percentage total # people approached (123)	N	Percentage total # people approached (222)
Take-homes not returned			8	6.5%	8	3.6%
Filled in other/same survey	1	1%	1	0.8%	2	1%
Partner filled in survey	1	1%	1	0.8%	2	1%
Language Difficulties	3	3%			3	1.4%
No Time			10	8.1%	10	4.5%
Not Interested	2	2%	2	1.6%	4	1.8%
Left before returning survey	5	5%			5	2.2%
Dog ate survey			2	1.6%	2	1%
<b>Non-Response</b>	<b>12</b>	<b>12%</b>	<b>24</b>	<b>19.5%</b>	<b>36</b>	<b>16.2%</b>

## a) Background Information

## Key Findings

### Stage 1: September 2001 *Visitor Profile*

During this first data collection stage,

- The majority of visitors (respondents) to Murray Falls were **Australian** (as opposed to international visitors). Of the Australian visitors, most were **national** visitors, i.e., they lived outside the Wet Tropics Bioregion;
- **Nonindigenous Australians** were the major ethnic group;
- The highest level of education for the majority of visitors was **Secondary**;
- While the average age of visitors was **38 years**, the majority were in the **20 – 29 age class**;
- Almost equal numbers of males and females participated in this survey.

### Stage 2: April 2002 *Visitor Profile*

Only a slight variation in the visitor profile was evident in this second data collection stage.

- While the majority of visitors to Murray Falls continued to be **Australian**, the number of international visitors had increased. Of the Australian visitors, the majority lived within the Wet Tropics Bioregion i.e., were **local** visitors;
- **Nonindigenous Australians** were still the major ethnic group;
- The highest level of education achieved for the majority of visitors again was **Secondary**;
- Average age of visitors declined slightly to **34 years**, but the majority remained in the **20 – 29 age class**;
- Again almost equal numbers of males and females participated in this survey.

### Combined Data & General Comments

For the combined data set, the visitor profile was as follows:

- The majority of visitors to Murray Falls were **Australian** (69.8%), which is lower than the 1993 results (81.8%, n = 33), with international visitors at 30.2%. There were significantly more Australians at the site than international visitors during both data collection periods [Chi-Square (df = 1) = 5.57]. Of the international visitors, the majority came from **Germany** (24%) followed by the **UK** (22.2%);
- Of the Australian visitors, the majority were **locals** (68.8%), i.e., living within the Wet Tropics Bioregion. Of these, 47.9% came from **Townsville & district** and 27.4% from Cairns & district;
- Just over half the visitors (52.5%) identified themselves as **Nonindigenous Australians**;

1. This visitor profile suggests that Murray Falls is **an important local use site**, particularly for those local community residents of the **southern region** of the WTWHA.
2. It is also a site that is used most frequently by **young people**, i.e., those in the 20-29 age class.
3. Of the international visitors it is most popular with **Germans and English/UK citizens**.

### a) Background Information

### QUESTIONS & RESULTS

#### 1. Where do you live?

STAGE 1: (September 2001)				STAGE 2: (April 2002)													
<b>N* = 87</b>				<b>N* = 92</b>													
<b>Australia 78.2% n = 68</b>				<b>Australia 62% n = 57</b>													
Locals n = 29 (48.3%) (n = 60 responses)				Locals n = 44 (84.6%) (n = 52 responses)													
Cairns & District n = 8	Edmonton n = 1	Tully n = 4	Cardwell n = 3 Townsville & District n = 13	Cairns & District n = 12	Innisfail n = 3	Gordonvale n = 1	Mareeba n = 1	Tully n = 3	Cardwell n = 1	Ingham n = 1	Townsville & District n = 22						
Non-Locals n = 31 (51.7%)				Non-Locals (national) n = 8 (17.4%)													
<b>Overseas 21.8% n = 19</b>				<b>Overseas 38.0% n = 35</b>													
Austria n = 4	Canada n = 3	Czech n = 1	Germany n = 5	Denmark n = 1	Netherlands n = 1	Channel Is n = 1	England n = 2	Czech n = 1	Germany n = 8	Holland n = 2	Ireland n = 2	Israel n = 1	Spain n = 2	Sweden n = 4	Switzerland n = 2	UK n = 10	USA n = 3
<b>Comparative Data 1993:</b> Australian = 81.8% (Local = 69.7%); Overseas = 18.2% n = 33																	

#### 2. How long have you lived there?

Period of Residence: <b>N = 85</b> $\bar{X} = 24.11 \text{ years} \pm 20.48 \text{SD (range 0-75)}$ ≤ 10 years = 30.6%      > 10 years = 69.4%	Period of Residence: <b>N = 83</b> $\bar{X} = 27.08 \text{ years} \pm \text{SD } 16.81 \text{ (range 1-67)}$ ≤ 10 years = 12.0%      > 10 years = 88.0%
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#### 3. How would you describe your ethnic background?

N = 87				N = 92			
<b>Nonindigenous</b>			<b>Other 12.8%</b>	<b>Nonindigenous</b>			<b>Other 13%</b>
<b>Australian 58.1%</b>				<b>Australian 47.8%</b>			
Indigenous Australian 10.5%			Austrian 4	Indigenous Australian 0.0%			Czech 1
Canadian 1.2%			Channel Is 1	American 3.3%			Dutch 2
<b>German 10.5%</b>			Czech 1	Swedish 4.3%			English / German 1
French 1.2%			Danish 1	German 8.7%			English / Irish / Scottish 1
English 4.7%			Dutch 1	Swiss 2.2%			Irish/Scottish 1
Irish 1.2%			English/Irish 1	<b>English 19.6%</b>			NZ 1
			New Zealander 1	Irish 4.4%			Israeli 1
			Quebec 2	Scottish 2.2%			Spanish 2
			Serbian 1	Japanese 1.1%			Vietnamese 1
			Turkish 1				Welsh 1

#### 4. What is the highest level of formal education you have completed so far?

N = 86			N = 90		
Primary (1-8 years of education)	3.5%		Primary (1-8 years of education)	3.3%	
<b>Secondary (9-12 years of education)</b>	<b>38.4%</b>		<b>Secondary (9-12 years of education)</b>	<b>35.6%</b>	
Tertiary A (Technical or further educ institution)	30.2%		Tertiary A (Tech or further educ institution)	28.9%	
Tertiary B (University)	27.9%		Tertiary B (University)	32.2%	

#### 5. Age

<b>N = 84</b> $\bar{X} = 38.46 \text{ years} \pm \text{SD } 15.69 \text{ (range 15-75)}$ Age Categories: < 20 years = 4.8%      40-49years = 15.7% <b>20-29years = 31.3%</b> 50-59 years = 4.8% 30-39years = 26.5%      > 60 years = 16.9%	<b>N = 89</b> $\bar{X} = 34.26 \text{ years} \pm \text{SD } 13.26 \text{ (range 12-67)}$ Age Categories: < 20 years = 10.1%      40-49years = 16.8% <b>20-29years = 34.8%</b> 50-59 years = 8.9% 30-39years = 21.3%      > 60 years = 6.7%
<b>Comparative Data 1993:</b> 16-25 = 30.3%; 26-45 = 63.6%; 45-65 = 6.1% n = 33	

#### 6. Gender

<b>N = 70</b> Male 49.4% Female 50.6%	<b>N = 91</b> Male 49.5% Female 50.5%
<b>Comparative Data 1993:</b> Male = 66.7%; Female = 33.3% n = 33	

## b) Transport & Travel Group

## Key Findings

### Stage 1: September 2001 *Travel Profile*

During this first data collection stage,

- *No visitors* to Murray Falls were with an *organised tour*;
- On average there were *2.7 people* in each vehicle;
- The major group profile of people visiting the site was *two adults who were not accompanied by children*;
- The majority of visitors travelled in *privately owned* vehicles;
- The **two most** important sources of prior information about Murray Falls were “*word of mouth*” followed closely by “*have been here before*”. The **least** important was “*tourist information centres outside NQ*”.

### Stage 2: April 2002 *Travel Profile*

Only slight differences were evident in this second data collection stage.

- *A few visitors* to Murray Falls were with an *organised tour*,
- There was a slight increase in the average number of people per vehicle to *3.4*;
- The major group profile of people was again *two adults*;
- Almost all visitors travelled in *privately owned* vehicles;
- The **two most** important sources of prior information about Murray Falls were “*word of mouth*” followed closely by “*have been here before*”. The **least** important was “*from the web*”.

### Combined Data & General Comments

For the combined data set, the visitor profile is as follows:

- The majority of visitors (96.1%) to Murray Falls were *independent travellers*, which is slightly higher than 1993 results (90.9%, n = 33);
- On average there were *3.1 people* in each vehicle, which is slightly higher than 1993 results (2.8, n = 33);
- Almost all visitors (89.1%) travelled in *privately owned* vehicles;
- “*Word of mouth*” (38.0%) was the most important sources of prior information about Murray Falls. The **least** important was “*tourist information centre outside NQ*”, used by only two of the respondents.

1. *Despite this data collection occurring over two school holiday periods, few family groups used Murray Falls. The major group profile of visitors was two adults.*
2. *It is clear that most people get to know of this site by world of mouth.*
3. *It is also clear that very few people use NQ information centres for information about this site.*
4. *Murray Falls is a site that attracts repeat visits. At least one third of visitors have been before.*

**b) Transport & Travel Group**

**QUESTIONS & RESULTS**

<b>7. Are you with an organised tour?</b>					
<i>N = 87</i>	Yes	0.0%	No	100%	
<i>N = 92</i>	Yes	7.6%	No	92.4%	

<b>8. If you travelled in a private or hired vehicle, how many people including yourself are in your vehicle?</b>					
<i>N = 87</i>			<i>N = 84</i>		
People per Vehicle	$\bar{X} = 2.69 \pm SD 1.16$	(range 1-6)	People per Vehicle	$\bar{X} = 3.44 \pm SD 1.83$	(range 1-12)
Adults per vehicle	$\bar{X} = 2.22$	(n = 218)	Adults per vehicle	$\bar{X} = 2.61$	(n=214)
Children per vehicle	$\bar{X} = 0.57$	(n = 46)	Children per vehicle	$\bar{X} = 0.83$	(n = 61)
<b>Private vehicle 87.8%</b>		Hired Vehicle 12.2%	<b>Private vehicle 90.4%</b>		Hired Vehicle 9.6%
<b>Comparative Data 1993:</b>					
		People per vehicle = 2.8			n = 33
		Private vehicle = 72.7%;	Hired vehicle = 12.1%;	Commercial = 9.1%;	Other = 6.1%

<b>9. How did you obtain prior information about this site?</b>					
<i>N = 87</i>			<i>N = 92</i>		
	n	%		n	%
<b>Have been here before</b>	29	33.3%	<b>Have been here before</b>	25	27.2%
Road sign	11	12.6%	Road sign	24	26.1%
<b>Word of mouth</b>	33	37.9%	<b>Word of mouth</b>	35	38.0%
Map which said it was a tourist site	13	14.9%	Map which said it was a tourist site	16	17.4%
Tourist information centre in Nth Qld	11	12.6%	Tourist information centre in Nth Qld	2	2.2%
Tourist information centre	0	0.0%	Tourist information centre	2	2.2%
Tourist leaflet	3	3.4%	Tourist leaflet	7	7.6%
Travel guide or book	9	10.3%	Travel guide or book	15	16.3%
From the web	3	3.4%	From the web	1	1.1%
Trip was included in a package tour	0	0%	Trip included in a package tour	0	0.0%
Other	6	6.9%	Other	7	7.6%
Came with friend	2	2.3%	Came with daughter/friend	3	3.3%
Swam here as children	1	1.1%	Accommodation House	2	2.2%
Grew up in region/local	1	1.1%	Grew up in region/local	1	1.1%
Camping Qld QPWS	1	1.1%	Turned off highway to investigate	1	1.1%
Needed place to sleep	1	1.1%			
<b>Specify:</b>			<b>Specify:</b>		
Travel guide or book : RACQ, Lonely Planet, Camping in QLD			Tourist inform centre: Ingham		
			Tourist leaflet: Kookaburra campsite leaflet, Scottys, The Green Way, Wet Tropics newspaper		
			Travel guide or book : Explore Australia, Lonely Planet, RACQ NP, Walks in NQld		

## c) Reasons for Visiting

## Key Findings

### Stage 1: September 2001

During this first data collection stage,

- In general, the most important reasons given for why people visit Murray Falls were *experiential*, followed by *activity*-based reasons. *Educational* reasons were least important;
- To *see the natural features and scenery* was the most important reason given;
- This was followed by three other experiential reason - *rest and relaxation, be close to/experience nature*, and, closely linked to these two, *experience tranquillity*;
- Activity-based reasons were moderately important. Of these, *opportunities for short walks*, rated the highest;
- Educational reasons were, on average, only slightly important. *Learning about Aboriginal culture* was the least important.

### Stage 2: April 2002

During this second data collection stage, only slight differences in responses were evident.

- The most important reasons given for why people visit Murray Falls were again *experiential*, followed by *activity*-based reasons. Educational reasons were least important.
- To *see the natural features and scenery* was the most important reason given, with **68.1%** of visitors rating this as *very important*;
- This was followed by three other experiential reason - *rest and relaxation, experience tranquillity* and *be close to/experience nature*;
- Activity-based reasons were moderately important. Of these, *opportunities for short walks*, rated the highest;
- Educational reasons were, on average, only slightly important. *Learning about Aboriginal culture* was the least important with just over half the visitors considering this as not important.

### Combined Data & General Comments

- The four most important reasons given for visiting the site were rated *very important* by between 50.9% and 66.7% of visitors (*see natural features & scenery* - 66.7%; *rest & relax* – 61.3%; *experience tranquillity* – 53.5%; *be close to nature* – 50.9%); Visitors rated these experiential reasons *significantly higher* than activity and educational reasons [t(174) = 12.954; p = 0.00];
- The least important reason given was rated *not important* by 44% of visitors - *learn about aboriginal culture*. Visitors rated the two educational reasons *significantly lower* than experiential [t(169) = -22.498; p = 0.00], and activity reasons [t(169) = -9.739; p = 0.00].

1. *The primary reasons for people visiting Murray Falls is to see the natural features of the site and to just rest and relax.*
2. *Clearly activity-based reasons are secondary for most people.*
3. *Learning about the natural and cultural features of the site do not appear to be why people visit this site.*



**c) Reasons for Visiting**

**QUESTIONS & RESULTS**

10. We would like to know how important the following <u>reasons</u> were for you visiting this site today.									
		1 = Not important 4 = Important		2 = Slightly important 5 = Quite important		3 = Moderately important 6 = Very important			
		Not Important				Very Important			
		n	1	2	3	4	5	6	$\bar{X}^*$
a) Learn about native animals and plants <i>(Educational)</i>	83	22.9%	14.5%	27.7%	18.1%	7.2%	9.6%	3.01	
	87	24.1%	21.8%	20.7%	14.9%	8.0%	10.3%	2.92	
b) Learn about Aboriginal culture <i>(Educational)</i>	81	35.8%	25.9%	14.8%	12.3%	3.7%	7.4%	2.44	
	87	<b>51.7%</b>	20.7%	3.4%	8.0%	8.0%	8.0%	2.24	
c) See natural features and scenery <i>(Experiential)</i>	83	3.6%	2.4%	6.0%	8.4%	14.5%	<b>65.1%</b>	<b>5.23</b>	
	91	1.1%	0.0%	6.6%	5.5%	18.7%	<b>68.1%</b>	<b>5.45</b>	
d) Be close to/experience nature <i>(Experiential)</i>	82	6.1%	4.9%	6.1%	7.3%	19.5%	<b>56.1%</b>	<b>4.98</b>	
	89	3.4%	2.2%	11.2%	13.5%	23.6%	46.1%	4.90	
e) Socialise with family/friends <i>(Experiential)</i>	81	34.6%	2.5%	2.5%	12.3%	17.3%	30.9%	3.68	
	88	10.2%	5.7%	9.1%	9.1%	18.2%	47.7%	4.63	
f) Rest and relax <i>(Experiential)</i>	84	3.6%	6.0%	3.6%	9.5%	17.9%	<b>59.5%</b>	<b>5.11</b>	
	89	1.1%	2.2%	3.4%	13.5%	16.9%	<b>62.9%</b>	<b>5.31</b>	
g) Experience tranquility <i>(Experiential)</i>	82	7.3%	3.7%	4.9%	9.8%	22.0%	<b>52.4%</b>	<b>4.93</b>	
	88	1.1%	2.3%	8.0%	19.3%	14.8%	<b>54.5%</b>	<b>5.08</b>	
h) Experience the Wet Tropics <i>(Experiential)</i>	84	9.5%	8.3%	14.3%	10.7%	19.0%	38.1%	4.36	
	88	6.8%	10.2%	11.4%	15.9%	20.5%	35.2%	<b>4.39</b>	
i) Outdoor exercise <i>(Activity)</i>	83	13.3%	12.0%	16.9%	15.7%	19.3%	22.9%	3.84	
	88	12.5%	6.8%	18.2%	23.9%	17.0%	21.6%	3.91	
j) Opportunities for short walks <i>(Activity)</i>	84	13.1%	7.1%	11.9%	19.0%	19.0%	29.8%	4.13	
	91	7.7%	3.3%	16.5%	22.0%	25.3%	25.3%	4.30	
k) Opportunities for long walks <i>(Activity)</i>	81	22.2%	16.0%	23.5%	12.3%	8.6%	17.3%	3.21	
	88	21.6%	12.5%	18.2%	14.8%	14.8%	18.2%	3.43	
l) Other	86	1.2%	1.2%	2.3%	1.2%	2.3%	10.5%	NA = 81.4%	
	85	2.4%	0.0%	0.0%	0.0%	2.4%	20.0%	NA = 75.3%	
Specify other reasons:  <i>Reasons provided have been placed into three major categories. Those that are related to activity, experience, education. The fourth category is "other".</i>	15	Activity: Photography/film Swim Have lunch	n 1 4 1	Experiential: Do something different Enjoy falls from water Get away from town Nirvana Rest between cns tsv	n 1 1 1 1 1	Other: Reflect on how place was once See falls Easily accessible Low cost accom	n 1 1 1 2		
	20	Activity: Camp in nature Lunch/picnic Photos Swim Jump & run amok	n 1 2 1 1 1	Experiential: Get away from tourists Get out of hostile Sound of waterfall Avoid mobile phones Value for money See waterfall	n 1 2 1 1 1 2	Other: Cheap stop Break long journey detour	n 3 1 1		

$\bar{X}$  = The mean of the categories are presented despite this being ordinal data and the precautions necessary in interpreting this data.

**d) Natural Environment****Key Findings****Stage 1: September 2001**      *Visitor Appraisal*

During this first data collection stage,

- Overall, **visitor appraisal** of the positive aspects of the natural environment at Murray Falls was **high**;
- In particular, the majority of visitors found the natural environment to be **interesting** and **appealing**;
- In terms of the condition of the natural environment, **over half strongly agreed that it appeared to be good**;
- Over **85%** of visitors **somewhat to strongly agreed** that the natural environment was **well managed**;
- Visitors were only **slightly concerned** about the **impacts of human activity** on the natural environment at Murray Falls. The majority of visitors did not consider the site to be disturbed or impacted;
- Very few visitors reported specific expectations for other natural features at the site.

**Stage 2: April 2002**      *Visitor Appraisal*

During this second data collection stage, only slight variations in some responses were evident.

- Again, **visitor appraisal** of the positive aspects of the natural environment was **high**;
- The majority of visitors (61.5%) **strongly agreed** that Murray Falls was **appealing**;
- In terms of the condition of the natural environment, **over half strongly agreed that it appeared to be good**;
- Over **80%** of visitors **somewhat to strongly agreed** that the natural environment was **well managed**;
- Visitors were again only **slightly concerned** about the **impacts of human activity** on the natural environment, and, did not consider the site to be disturbed or impacted.

**Combined Data & General Comments**

For the combined data set,

- Aspects of the natural environment that were most highly rated were the **condition** ( $\bar{X} = 5.34$ ), **appeal of natural attractions and scenic beauty** ( $\bar{X} = 5.33$ ), and **management of the natural environment** ( $\bar{X} = 5.28$ ).
- Very few visitors (9.8%) appeared to have particular expectations of what they would find or encounter.

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1. **These results suggest that, overall, visitors are very impressed with the natural features of Murray Falls and the condition and management of these features.**

2. **Of the natural features that the small number of visitors reported expecting to find at Murray Falls but were unable to, most were fauna-related.**

**d) Natural Environment**

**QUESTIONS & RESULTS**

**11. The following statements are about the natural features of this site. Please rate the extent to which you agree or disagree with each statement by circling the number that best reflects your level of agreement /disagreement.**

**1 = Strongly Disagree    2 = Somewhat Disagree    3 = Mildly Disagree  
4 = Mildly Agree        5 = Somewhat Agree        6 = Strongly Agree**

	n	Strongly Disagree			Strongly Agree			$\bar{X}$ *
		1	2	3	4	5	6	
a) The natural environment at this site is interesting.	85	1.2%	0.0%	3.5%	16.5%	30.6%	48.2%	5.2
	91	0.0%	0.0%	1.1%	23.1%	30.8%	45.1%	5.2
b) I would like to spend more time exploring this natural environment.	85	4.7%	2.4%	17.6%	20.0%	22.4%	32.9%	4.52
	92	0.0%	6.5%	8.7%	30.4%	23.9%	30.4%	4.63
c) In terms of natural attractions and scenic beauty this site is appealing.	83	1.2%	1.2%	0.0%	20.5%	31.3%	45.8%	5.17
	91	0.0%	0.0%	2.2%	9.9%	26.4%	61.5%	5.47
d) The condition of the natural environment at this site appears to be good.	83	1.2%	1.2%	2.4%	12.0%	30.1%	53.0%	5.28
	91	0.0%	0.0%	1.1%	9.9%	36.3%	52.7%	5.41
e) The natural environment at this site is well managed.	82	1.2%	0.0%	0.0%	13.4%	40.2%	45.1%	5.27
	91	0.0%	0.0%	1.1%	16.5%	35.2%	47.3%	5.29
f) I am concerned about the impacts of human activity on the natural environment at this site.	83	18.1%	14.5%	16.9%	21.7%	13.3%	15.7%	3.45
	91	20.9%	14.3%	18.7%	18.7%	9.9%	17.6%	3.35
g) This site appears to be disturbed and impacted.	83	47.0%	15.7%	15.7%	16.9%	1.2%	3.6%	2.20
	91	37.4%	20.9%	15.4%	14.3%	6.6%	5.5%	2.48

**12. At this site were there any natural features you were expecting to find which were not present?**

<b>N = 85</b>		Yes	10.6%	No	89.4%	<b>N = 89</b>		Yes	9.0%	No	91.0%
<b>If yes, please specify:</b>  <i>Responses provided have been placed into three major categories. Those related to natural/biological features, natural/physical features, and the built/structural features of the environment.</i>	6	Natural/Biological:	n	Natural/Physical	n	Built/Structural	n				
		Animals/wildlife	1	Swim at falls	3						
		Birdlife	1								
		Crocodiles	1								
	7	Natural/Biological:	n	Natural/Physical	n	Built/Structural	n				
		Animals/wildlife	4			Info on wildlife & ecosystems	1				
		kangaroo	1								
		bearded dragon	1								

$\bar{X}$  = The mean of the categories are presented despite this being ordinal data and the precautions necessary in interpreting this data.

## e) Time Spent and Activities

## Key Findings

### Stage 1: September 2001 *Activity Profile*

During this first data collection stage,

- About *one third* of visitors to Murray Falls were *overnight campers*;
- *34.1%* of visitors said they spent from *two to four hours* at the site;
- Besides *observing scenery* and *relaxing*, the activities most visitors engaged in were a *short walk* and *swimming*, the third and fourth most popular activities;
- *14%* of visitors undertook a *longer walk (> 1 hr)*;
- Of those visitors who would have liked to engage in other activities, the majority identified activities that were *prohibited*, such as *swimming at falls*, *climbing over falls*, and *walking the dog*.

### Stage 2: April 2002 *Activity Profile*

During this second data collection stage, the responses changed slightly.

- Just over *one third* of visitors to Murray Falls were *overnight campers*;
- *24.6%* of visitors said they spent from *two to four hours* at the site;
- Besides *observing scenery* and *relaxing*, the activities most visitors engaged in were a *short walk* and *swimming*, the third and fourth most popular activities;
- Just *7.6%* of visitors undertook a *longer walk (> 1 hr)*;
- Of those visitors who would have liked to engage in other activities, the majority identified activities that were *prohibited*, such *climbing over and explore falls*, and *swimming at bottom of falls*.

### Combined Data & General Comments

1. *These results suggest that, overall, visitors do spend a reasonable amount of time at Murray Falls. It is a site that most people stay for a while.*
2. *While most of that time is spent observing scenery and just relaxing, many do take the short walk (boardwalk to falls). A lot fewer visitors take the longer walk.*
3. *The activity least engaged in is looking at interpretation material.*
4. *Of concern are those visitors (10.6%) who wished to engage in prohibited and risky activities such as climbing over and explore falls, and swimming at bottom of falls.*

### e) Time Spent and Activities

QUESTIONS & RESULTS

#### 13. How long have you spent at this site today?

N = 85				N = 92			
	%		%		%		%
less than 1/2 hour	1.2%	About 3 hours	8.2%	less than 1/2 hour	7.6%	About 3 hours	5.4%
About 1/2 hour	11.8%	About 4 hours	7.1%	About 1/2 hour	7.6%	About 4 hours	8.7%
About 1 hour	17.6%	More than 4hours	3.5%	About 1 hour	17.4%	More than 4hours	6.5%
About 2 hours	18.8%	<b>Overnight</b>	<b>31.8%</b>	About 2 hours	10.9%	<b>Overnight</b>	<b>35.9%</b>

**Comparative Data 1993:** <1/2 hr = 6.1%, <1 hr = 9.1%, 1-<2hrs = 24.2%; 2-<4hrs = 51.5%, overnight = 9.1%. n = 33

#### 14. What activities did you engage in at this site today?

N = 87				N = 92			
Activities:	%	Activities:	%		%		%
<b>Observing scenery</b>	<b>80.5%</b>	<b>Observing scenery</b>	<b>87%</b>				
Bird watching	24.1%	Bird watching	16.3%				
Observe other wildlife	36.8%	Observe other wildlife	18.5%				
Photography/painting/drawing	34.5%	Photography/painting/drawing	38.0%				
Picnic/barbeque	35.6%	Picnic/barbeque	37.0%				
Using café/restaurant	0%	Using café/restaurant	3.3%				
Camping	34.5%	Camping	40.2%				
<b>Walking – Short (1 hr or less)</b>	<b>67.8%</b>	<b>Walking – Short (1 hr or less)</b>	<b>58.7%</b>				
Walking – Long (1-6 hours)	13.8%	Walking – Long (1-6 hours)	7.6%				
Swimming	40.2%	Swimming	47.8%				
Guided tour	0%	Guided tour	0%				
Looking at interpretation material	16.1%	Looking at interpretation material	6.5%				
<b>Relaxing</b>	<b>68.9%</b>	<b>Relaxing</b>	<b>72.8%</b>				
Other	10.3%	Other	10.9%				
Drive	1	Completing this survey	2				
Completing this survey	2	Drinking	1				
Eating lunch	1	Campfire	1				
Fire at night	1						
Playing	2						

**Comparative Data 1993:** Swimming = 75.8%; Walking (long) = 24.2%; Walking(short) = 57.6%; Picnic/BBQ = 33.3%; Relaxing = 27.3%; Scenic viewing = 54.5%; n = 33

#### 15. Were there particular things you wanted to do at this site which you were unable to do?

N = 87				N = 80					
Yes	No	Yes	No	Yes	No	Yes	No		
20.7%	79.3%	21.3%	78.8%						
<b>If yes, please specify:</b>  <i>Responses provided have been placed into five major categories. Those activities related to natural, built, or psychosocial environment, and rules/regulations.</i>				<b>N = 16</b>		<b>N = 17</b>			
				Natural Environ Enjoy waterfall closely 1 Swim 2 Swim/falls 9	n	Rules/regulation Says no swimming but I did anyway 1 Go out to waterfall 1 Walk pet dog 1 Walk on rocks at own risk 1	n	PsychoSocial Environ Relax 1	n
				Built Environ Shower with door 1 Use payphone 2	n	Rules/regulation Climb & explore falls 1	n	PsychoSocial Environ Be alone 1 More time 1	n

## f) Information

## Key Findings

### Stage 1: September 2001 *Information/Signage Use*

During this first data collection stage,

- Most visitors strongly agreed that *maps* were easy to locate and that they enabled them to find their way round Murray Falls;
- *Rules and regulations* were easy to determine according to most visitors and the signage clearly identified what was acceptable activity;
- Most visitors also strongly agreed that *safety* information was easy to locate and was understandable;
- Visitor assessment of the *natural / ecological* information was generally lower than for the above information types;
- Visitor assessment of the *indigenous cultural* information was also generally lower than for the above information types.

### Stage 2: April 2002 *Information/Signage Use*

During this second data collection stage, visitor assessment of all information was lower.

- Most visitors continued to agree that *maps* were easy to locate and that they enabled them to find their way round Murray Falls;
- *Rules and regulations* were easy to determine according to most visitors and the signage clearly identified what was acceptable activity;
- Most visitors still agreed that *safety* information was easy to locate and was understandable;
- Visitor assessment of the *natural / ecological* information was considerably lower than for the above information types and compared to the Stage 1 data;
- Visitor assessment of the *indigenous cultural* information was low.

### Combined Data & General Comments

- While most visitors agreed that *rules and regulations* at Murray Falls were easy to determine, there is a concern about the 18 visitors (10.8%) who disagreed;
- It is also a concern that 25 visitors (15.2%) *did not easily locate* the *safety* information given the number of injuries and deaths that have occurred at this site;
- Despite this being a site with extensive *indigenous cultural* information, the majority of respondents disagreed that this information was of *interest, clearly presented*, or helped them *understand the significance* of the area for indigenous Australians. When tested for those who may not have actually seen this information but responded anyway, there remained no significant difference in responses except for *understanding significance* of the area for indigenous Australians, which was rated higher;
- The *natural/ecological* information at Murray Falls was mostly incorporated with the indigenous cultural information.

**f) Information**

**QUESTIONS & RESULTS**

<b>16. Did you refer to any of the information available at this site today?</b>	N = 83	Yes	48.2%	No	51.8%
	N = 87	Yes	35.6%	No	64.4%

<b>17. Please rate the extent to which you agree or disagree with the following statements about information that may be available at this site by circling one number.</b>								
All of the signs listed below were present at Murray Falls (see Section 2 for details).	n	Strongly Disagree			Strongly Agree			$\bar{X}$
		1	2	3	4	5	6	
a) The <b>maps and directions</b> at this site: i) were easy to <b>locate</b>	78	1.3%	1.3%	6.4%	10.3%	32.1%	48.7%	<b>5.17</b>
	85	4.7%	3.5%	7.1%	16.5%	27.1%	41.2%	4.81
	78	3.8%	1.3%	3.8%	16.7%	32.1%	42.3%	4.99
	83	9.6%	1.2%	4.8%	21.7%	26.5%	36.1%	4.63
ii) helped me to <b>find</b> my way round	81	2.5%	0.0%	3.7%	9.9%	27.2%	<b>56.8%</b>	<b>5.30</b>
	86	1.2%	5.8%	8.1%	7.0%	32.6%	45.3%	<b>5.0</b>
	81	3.7%	0.0%	2.5%	13.6%	25.9%	<b>54.3%</b>	<b>5.21</b>
	84	3.6%	6.0%	8.3%	8.3%	29.8%	44.0%	4.87
b) The <b>rules and regulations</b> at this site: i) were easy to <b>determine</b>	81	3.7%	2.5%	3.7%	6.2%	23.5%	<b>60.5%</b>	<b>5.25</b>
	84	4.8%	8.3%	7.1%	7.1%	27.4%	45.2%	4.80
	80	3.8%	3.8%	1.3%	5.0%	28.8%	<b>57.5%</b>	<b>5.24</b>
	82	4.9%	8.5%	4.9%	7.3%	26.8%	47.6%	4.85
ii) was easy to <b>understand</b>	81	2.9%	2.9%	11.6%	20.3%	29.0%	33.3%	4.70
	72	15.3%	11.1%	9.7%	16.7%	20.8%	26.4%	3.96
	71	4.2%	7.0%	8.5%	14.1%	26.8%	39.4%	4.70
	70	14.3%	10.0%	10.0%	21.4%	22.9%	21.4%	3.93
c) The <b>safety information</b> at this site: i) was easy to <b>locate</b>	70	8.6%	5.7%	12.9%	20.0%	22.9%	30.0%	4.33
	71	15.5%	15.5%	7.0%	25.4%	16.9%	19.7%	3.72
	66	13.6%	9.1%	15.2%	22.7%	13.6%	25.8%	3.91
	64	37.5%	12.5%	7.8%	18.8%	14.1%	9.4%	2.88
ii) was clearly <b>presented</b>	67	13.4%	11.9%	17.9%	16.4%	13.4%	26.9%	3.85
	64	37.5%	9.4%	7.8%	17.2%	17.2%	10.9%	3.0
	66	16.7%	9.1%	19.7%	18.2%	13.6%	22.7%	3.71
	64	35.9%	10.9%	12.5%	12.5%	18.8%	9.4%	2.95
iii) helped me better <b>understand</b> the ecological processes of this area	66	16.7%	9.1%	19.7%	18.2%	13.6%	22.7%	3.71
	64	35.9%	10.9%	12.5%	12.5%	18.8%	9.4%	2.95
d) The <b>natural/ecological information</b> at this site: i) was <b>interesting</b>	66	16.7%	9.1%	19.7%	18.2%	13.6%	22.7%	3.71
	64	35.9%	10.9%	12.5%	12.5%	18.8%	9.4%	2.95
	67	13.4%	11.9%	17.9%	16.4%	13.4%	26.9%	3.85
	64	37.5%	9.4%	7.8%	17.2%	17.2%	10.9%	3.0
	66	16.7%	9.1%	19.7%	18.2%	13.6%	22.7%	3.71
	64	35.9%	10.9%	12.5%	12.5%	18.8%	9.4%	2.95
ii) was clearly <b>presented</b>	66	16.7%	9.1%	19.7%	18.2%	13.6%	22.7%	3.71
	64	35.9%	10.9%	12.5%	12.5%	18.8%	9.4%	2.95
	67	13.4%	11.9%	17.9%	16.4%	13.4%	26.9%	3.85
	64	37.5%	9.4%	7.8%	17.2%	17.2%	10.9%	3.0
	66	16.7%	9.1%	19.7%	18.2%	13.6%	22.7%	3.71
	64	35.9%	10.9%	12.5%	12.5%	18.8%	9.4%	2.95
iii) helped me better <b>understand</b> the ecological processes of this area	66	16.7%	9.1%	19.7%	18.2%	13.6%	22.7%	3.71
	64	35.9%	10.9%	12.5%	12.5%	18.8%	9.4%	2.95
	67	13.4%	11.9%	17.9%	16.4%	13.4%	26.9%	3.85
	64	37.5%	9.4%	7.8%	17.2%	17.2%	10.9%	3.0
	66	16.7%	9.1%	19.7%	18.2%	13.6%	22.7%	3.71
	64	35.9%	10.9%	12.5%	12.5%	18.8%	9.4%	2.95
e) The <b>indigenous cultural information</b> at this site: i) was <b>interesting</b>	66	16.7%	9.1%	19.7%	18.2%	13.6%	22.7%	3.71
	64	35.9%	10.9%	12.5%	12.5%	18.8%	9.4%	2.95
	67	13.4%	11.9%	17.9%	16.4%	13.4%	26.9%	3.85
	64	37.5%	9.4%	7.8%	17.2%	17.2%	10.9%	3.0
	66	16.7%	9.1%	19.7%	18.2%	13.6%	22.7%	3.71
	64	35.9%	10.9%	12.5%	12.5%	18.8%	9.4%	2.95
ii) helped me to <b>understand</b> the significance of this area for indigenous Australians	66	16.7%	9.1%	19.7%	18.2%	13.6%	22.7%	3.71
	64	35.9%	10.9%	12.5%	12.5%	18.8%	9.4%	2.95
	67	13.4%	11.9%	17.9%	16.4%	13.4%	26.9%	3.85
	64	37.5%	9.4%	7.8%	17.2%	17.2%	10.9%	3.0
	66	16.7%	9.1%	19.7%	18.2%	13.6%	22.7%	3.71
	64	35.9%	10.9%	12.5%	12.5%	18.8%	9.4%	2.95

## ***g) Site Facilities & Management Issues***

## ***Key Findings***

Stage 1: September 2001

*Visitor Appraisal*

During this first data collection stage,

- While all facilities listed were used, the ***boardwalk*** at Murray Falls was ***most frequently*** used;
- The ***condition and management*** of facilities were the two features ***most highly rated*** with over half of the visitors strongly agreeing with their status;
- ***Adequacy and appeal*** of facilities were also rated ***high***;
- Presence of a ***ranger*** was important to 51.9% of visitors;
- The three most frequently identified reasons for the ranger's presence were for ***site maintenance, safety & security***, and to ***provide information/education***.

Stage 2: April 2002

*Visitor Appraisal*

During this second data collection stage, visitor appraisal of facilities varied slightly.

- While all facilities listed were used, the ***viewing platform/lookout*** was ***most frequently*** used;
- The ***condition and management*** of facilities were again the ***most highly rated*** considerations;
- ***Appeal*** of facilities was rated ***higher*** during this data collection period, and ***adequacy*** rated ***lower***;
- Presence of a ***ranger*** was important to more visitors – 61.3%;
- The three most frequently identified reasons for the rangers presence and rated higher this season were for ***site maintenance, safety & security***, and to ***answer questions***.

### **Combined Data & General Comments**

- The most frequently used facility at Murray Falls was the ***boardwalk*** to the bottom of the falls;
- The facility most often requested was ***more shelter sheds*** – currently one small one exists at the site;
- ***Condition of facilities*** received the highest rating ( $\bar{X} = 5.42$ ), with 89.1% of visitors somewhat and strongly agreeing that the condition was good;
- Of the 57% of visitors for whom the presence of a ranger was important, the majority identified ***site maintenance*** as the reason.

1. *Visitors use all facilities available.*

2. *These results suggest that, overall, visitors are **very impressed** with the **condition and maintenance of facilities** at Murray Falls, as well as finding them appealing and adequate.*



- 26.09.01 Natural beauties like waterfalls should be enjoyed in a natural way. On a warm to hot day its seems to me to be a natural reaction to cool off and enjoy the beauty of the falls from the water.  
Pollution from bodies can't be a problem as swimming is allowed down stream. Authorities should be able to allow a person's discretion as to danger. I know about liability but danger and accidents could still occur downstream. The enjoyment I'd hoped to experience was cancelled out by the restrictions.  
*(Australian visitor, female, 60 years).*
- 26.09.01 My wife and I are true NOMADS (for the last 15,5 years)- Our solar Powered caravan is totally environmentally set up (PortPotti using acquaChem Gallen etc)- No days- we leave only footprints. We are as comfortable in the bush as in any caravan Park (maybe more so) and enjoy these places. Visits to this site could be- 2 to 3 times yearly. -every 2-3 years. Depending on which state we are in at any one time. Re smoke from fines- WA NATIONAL PARKS are mostly fine- free \*gas fined BBQ's provided). Yesterday a young family sat around the fireplace and continuously burnt wood- even when not cooking etc. Whilst the Aussie tradition of a campfire is great, they are not necessary to survive (we don't use them except in rare circumstances).  
*(Australian visitor, male, 63 years).*
- 26.09.01 Questions were ok except Q3 on environmental agencies would like to know.  
*(Australian visitor, male, 49 years)*
- 26.09.01 Let's 'green peace' to use a president of United States of America. And than so help me God. Not me, them.  
*(Serbian Orthodox visitor, male, 27 years)*
- 26.09.01 Your survey was easy to comprehend, due to bold type and had an easy scale to rate.  
*(Australian visitor, female, 21 years)*
- 26.09.01 Good survey. Good use of Bold font.  
*(Australian visitor, male, age not specified)*
- 23.09.01 The only animal we saw scavenging was at night- a bandicoot or tiny kangaroo species. We saw no bush turkeys, kookaburras, wallabies, cane toads.  
*(Australian visitor, female, 38 years)*
- 26.09.01 A very impressive camping area. I will return and bring others.  
*(Australian visitor, female, 40 years)*
- 26.09.01 A well managed park, but hard to get information on ..ain info from world of mouth which requires local knowledge/network. Hard for visitors to access. PS: Your form is a bit long for someone in holiday mode. What about ESL speaker or low level literary visitors?  
*(Australian visitor, female, 44 years)*
- 23.09.01 My perception of N<sup>th</sup> QLD is not what I thought. The water is not blue, beaches are not as good as I thought.  
*(Australian visitor, male, 45 years)*
- 23.09.01 Where are the crocodiles?  
*(Austrian visitor, male, 21 years)*
-

**SITE : Murray Falls****April 2002**

The following are comments made by 24 respondents (26%) who completed the questionnaire at Murray Falls.

<b>Date</b>	<b>Comments</b>
04.04.02	On a 3 month visit to Australia we have visited many sites like this throughout QLD, VIC, NSW and ACT. This was one of the “better” sites in my opinion as it had good facilities (although basic) and a real attempt seemed to have been made to preserve it <u>and</u> enhance its attraction to tourists. Some places we have visited have had boardwalks everywhere so you feel like you’re in a museum rather than in natural surroundings. Plenty of space for everyone. <i>(UK visitor, female, 25 years).</i>
04.04.02	Beautiful area. <i>(Australian visitor, female, 38 years).</i>
04.04.02	We have camped in National Parks, State Forests whilst travelling to Cairns. Enjoyed the experience and services of those in QLD. Disappointed when there are roads only suited to 4WDs as happened in some parks. <i>(Irish visitor, female, 27 years).</i>
04.04.02	I have travelled extensively throughout Australia and found it very educational and peaceful: to have stayed in natural environments i.e. State Forests and National Parks; to see places you only hear about; and to see Australian animals in their natural environment. <i>(Irish visitor, male, 26 years).</i>
04.04.02	I was worried that if I said negative things about the park it may be closed down! <i>(Australian visitor, female, 29 years).</i>
04.04.02	I am from Bilyana, 10 minutes drive from here. As a family we come here all the time to swim and camp. I would like a children’s playground in the camping area. This is a very well used area by families with small children, and a playground would make this place just PERFECT!! <i>(Australian visitor, female, ? age).</i>
04.04.02	Some form of control over loud music from other campsites. Not only for other campers, but also for the wildlife. <i>(Australian visitor, 54 years, male).</i>
04.04.02	No loud music from boom boxes. <i>(Australian visitor, 50 years, female).</i>
04.04.02	Keep it plain and simple. It is just enough. Please look into Koombaloomba Dam, Sky Rail, Fox Rail etc. proposals, tenders, costs for locals, environment, who has submissions in – is it too late to stop it? Why set up something in such a beautiful spot? Is it possible to send anyone, who is interested in all proposals, every detail on this subject? <i>(Australian visitor, 43 years, male).</i>
06.04.02	BBQs were great. Wood too large (I didn’t have an axe), there was no kindling. Overall, great swimming holes, and the rock formations were quite spectacular. A well kept park, great! <i>(English visitor, 29 years, male).</i>
06.04.02	If fires are allowed, I like the wood to be provided to stop collecting. It is good that toilets/showers are provided in this high use area. Outlets from shower seemed close to the creek – I may be wrong about this? Facilities were clean and well maintained. Indigenous people might like to take interested visitors on guided walks. I would be especially interested in traditional trails like those mentioned in information panels. For example, walk a trail to another place of interest/significance/beauty. Sites such as this should be protected from long stay individuals/groups eg. With caravans!! (more than 4 days). <i>(Australian visitor, 50 years, female).</i>
06.04.02	Regarding question 18., it might be a good idea for some of the local indigenous people to provide interpretive walks in the area for interested visitors. <i>(Australian visitor, 25 years, ? gender).</i>

- 06.04.02 Split firewood – and dry. Two German tourists departed before this survey began. They had planned on staying for 4 days but left due to inability to cut firewood (did not have an axe). Door on the shower.  
*(Australian visitor, 57 years, male).*
- 06.04.02 Re: Impact of environment on mental health. Cyclone Winifred hit Innisfail in 1986. I'd seen many cyclones come and go, but this one affected me badly when it went beyond all past experience. I could smell the sap bleeding from the trees as their bark was stripped. I could feel the trees screaming in anguish (my husband thought I was mad!). Afterwards, for weeks, no leaves, nothing green. A green ping-pong table was covered with chrysalis (insects confused), denuded trees put deformed blooms out from trunks (confused trees), little sunbirds became aggressive and fought over the few blossoms (confused birds), bedraggled cassowaries wondered around our farm and roads cheeping pitifully. All these things (combined with my damaged house, lost crop etc.) led to depression which took years to lift, just as it took years for the trees to recover. I had not realised how much I needed things to be "right" with the natural world. P.S. there was no such thing as trauma counselling, just as we had no water for days and no electricity for weeks. Later that same year my mother died (in April) and my brother (in December). Not a good time!!  
*(Australian visitor, 62 years, female).*
- 06.04.02 To keep things in perspective: the size of the camping area as a percentage of the total park is very small. So surely, any human impact, restricted to the camping area and walking tracks, is minor in relation to the total park size. I believe minor environmental degradation, weeds, and minor tree damage is unavoidable, and of little consequence as long as scenic beauty, tranquillity and accessibility is maintained.  
*(Australian visitor, 42 years, male).*
- 06.04.02 We come here and to other similar areas regularly. Therefore we take for granted what is here, and keep coming back because we like what is here.  
*(Australian visitor, 22 years, female).*
- 06.04.02 Cathu, Broadwater and Murray State Forest are a credit to DNR (State Forestry). I prefer State Forests to National Parks.  
*(Australian visitor, 35 years, male).*
- 06.04.02 It is a most beautiful spot. Worth a mention in Bedeckers, however, would probably "ruin" this place a little. Please don't allow any caravan parks here. The camping facilities are good enough. Thank you.  
*(Australian visitor, 25 years, male).*
- 06.04.02 A very nice place to get away from things. Very quiet and peaceful, and most of all we can relax.  
*(Australian visitor, 34 years, male).*
- 06.04.02 It's all good, don't change a thing!!!  
*(Australian visitor, 30 years, male).*
- 07.04.02 More info about how to save/protect the environment at home!  
*(German visitor, 26 years, male).*
- 07.04.02 Good that you do these questions. I hope that something happens with it.  
*(Dutch visitor, 24 years, male).*
- 07.04.02 I am very, very sensitive to environments. Great survey. Greetings from Holland.  
*(Dutch visitor, 23 years, male).*
- 07.04.02 It was raining so I reduced my involvement.  
*(Australian visitor, 35 years, male).*
-

***Comments to Field Assistants******Key Findings***

The following comments were most frequently reported to the field assistants at Murray Falls.

**Stage 1: September 2001**

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- The lack of fire wood was the most observed comment. Frequently, visitors inquired as to where (if any) the fire wood was kept at the site.
- Other comments focused on the management of the site. For example, one visitor wanted to know the difference between a National Park site, and a Forestry Park site.
- Visitors also reported that they would like no further development or expansion of the area.

**Stage 2: April 2002**

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- The most frequent theme in Stage 2 was on the management of the site. For example, a group of Swedish tourists were curious as to what the Wet Tropics Management Agency does, while another visitor was concerned about the survey aiming to change the site.

## ADDITIONAL COMMENTS MADE BY RESPONDENTS TO FIELD ASSISTANTS

### SITE : Murray Falls

### September 2001

The following are comments made by 13 visitors to the field assistants at Murray Falls.

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<b>Date</b>	<b>Comments</b>
22.09.01	Interested in whether research was funded by Wet Tropics <i>(Australian Visitor, 30 years, female)</i>
22.09.01	Indigenous person: very interested in what is a National Park and what is a Forestry Park <i>(Indigenous Visitor, 39 years, male)</i>
22.09.01	Lack of fireplace was a concern. <i>(Australian visitor, 65 years, female)</i>
22.09.01	Mentioned the environment was generally undisturbed. <i>(Australian visitor, 19 years, female)</i>
22.09.01	Wood at Barron Gorge had to be paid for. Free wood at Murray Falls discouraged destroying forest for fire wood. <i>(Indigenous Australian, 65 years, female)</i>
22.09.01	Wood for fire too green. <i>(Australian visitor, 62 years, male)</i>
22.09.01	Said they did not expect much, therefore impressed with all sites in the region, and the facilities they contain. <i>(German visitor, 23 years, female)</i>
22.09.01	He thought that the park was having a very peaceful feeling may be because of absorbing spirituality. <i>(Australian visitor, 45 years, male)</i>
23.09.01	Inquired as to whether there was firewood at Murray Falls <i>(Irish visitor, 30 years, female)</i>
23.09.01	Maybe firewood was a concern as Tully Gorge may not have had wood (?) <i>(Australian visitor, 25 years, male)</i>
23.09.01	Mentioned need for toilet block in day use area. Otherwise there should be no expansion of area and facilities. As natural is as best. <i>(Australian visitor, 41 years, female)</i>
26.09.01	Felt that there is plenty info on the indigenous people and none on whites , ie early settlers and pioneers. <i>(Australian visitor, 60 years, female)</i>
26.09.01	Wants no further development of the parks infrastructure. <i>(Australian visitor, 44 years, male)</i>

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## ADDITIONAL COMMENTS MADE BY RESPONDENTS TO FIELD ASSISTANTS

**SITE : Murray Falls**

**April 2002**

The following are comments made by 11 visitors to the field assistants at Murray Falls.

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<b>Date</b>	<b>Comments</b>
04.04.02	Mosquitoes are really tough! <i>(German visitor, 32 years, male)</i>
04.04.02	Very active, very interested to participate and keen to know what Wet Tropics Management Agency does. <i>(Swedish visitors, 21 years, male; 20 years, male; 21 years female)</i>
04.04.02	I introduced myself to ranger Mike Murphy (26 years park ranger). Murray Falls park was the first park in Queensland and used as a model for all others he said. Murray Falls is Forestry Department. <i>(Comment made by field assistant)</i>
06.04.02	Stated: regular avid camper, visits many sites. <i>(Australian visitor, 57 years, male)</i>
06.04.02	Two dogs with this group. <i>(Australian visitor, 19 years, female; English visitor 19 years, male)</i>
06.04.02	Believed walk to be pleasant. <i>(Australian visitor, 39 years, female)</i>
07.04.02	Very concerned with survey aiming to change site. <i>(Australian visitor, 41 years, male)</i>
07.04.02	Trail Bike rider from Upper Murray, visits all the time for swims, BBQ and hanging out with wife and friends. <i>(Male visitor, other details are unknown)</i>

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**BEHAVIOURAL EVENTS****Key Findings**

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**Combined Data Sets**

From the behaviours recorded at Murray Falls in September 2001 and April 2002, the following three behaviours were the most frequently observed.

- **Domestic Animals**

Despite signage stating that animals are prohibited, there were a number of sightings of domestic dogs on the site. While in most cases dogs were observed in the back of vehicles, there were some instances of dogs running around the site without leashes, and also swimming.

- **Deliberate damage to plants**

This behaviour was only observed during April 2002 (wet season). A group of supervised children were observed stripping back bark on many trees to make their own fire. The following day, a man stripped back bark on some trees for the same purpose. The damage from this was extensive.

- **Undesignated area use**

In both stages of data collection, groups of people were seen swimming in undesignated (prohibited) areas on the site. In Stage 1, tourists were seen swimming underneath the falls, while in Stage 2, groups were seen swimming in undesignated areas along the path. Swimming in undesignated areas appears to be a risk behaviour for this particular site as a girl observed in Stage 2, slipped and cut her chin.

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## **BEHAVIOURAL EVENTS**

The following are critical incidental observations of behavioural events made opportunistically by field assistants during the period of administration of surveys and counts of vehicles/visitors.

<b>Behavioural Topic</b>	<b>Comment : SEPTEMBER 2001</b>	<b>Comment: April 2002</b>
<b>Domestic Animals</b>	22.09.01 <ul style="list-style-type: none"> <li>• Dog present. 14.25 hrs.</li> <li>• Two dogs left in back of van while owners went for walk.</li> </ul> 23.09.01 <ul style="list-style-type: none"> <li>• Dog in back of car.</li> <li>• Dog present. 10.07 hrs.</li> <li>• As vehicle with domestic animal drove out – owners acknowledged the fact that they weren't supposed to have dog in park. 10.44 hrs.</li> </ul>	06.04.02 <ul style="list-style-type: none"> <li>• Two dogs with no leash, wandering around with owners (party of four) in the day use area. 13.45 hrs.</li> <li>• Two dogs in swimming area. 16.00 hrs.</li> </ul>
<b>Deliberate damage to plants</b>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	06.04.02 <ul style="list-style-type: none"> <li>• Children stripping bark severely – trying to make their own fire next to adults and fire pit. Adults were unconcerned 15.00 – 15.50 hrs.</li> </ul> 07.04.02 <ul style="list-style-type: none"> <li>• Man stripped bark for kindling. 11.50 hrs.</li> </ul>
<b>Undesignated Area Use</b>	23.09.01 <ul style="list-style-type: none"> <li>• Eight people swimming below the falls (a group of 'low key tours' with Japanese travellers).</li> </ul>	06.04.02 <ul style="list-style-type: none"> <li>• Group of four swimming in areas down path (prohibited areas). One girl cut and bruised her chin. 16.30 hrs.</li> </ul>
<b>Speeding</b>	22.09.01 <ul style="list-style-type: none"> <li>• 4WD skidding on road near counter site. 16.08 hrs.</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<b>Risk Activity</b>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	06.04.02 <ul style="list-style-type: none"> <li>• Visitors are sliding down rocks into water on plastic boards 'yahooing' each time. 15.00 – 16.10 hrs.</li> <li>• Old woman slipped on slippery rocks – hurt knee. 11.58 hrs.</li> </ul>
<b>Aggressive Behaviour</b>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>
<b>Other</b>	22.09.01 <ul style="list-style-type: none"> <li>• Visitor interaction with ants. 11.04 hrs.</li> </ul> 23.09.01 <ul style="list-style-type: none"> <li>• Ants nest blocking visitor pathway – visitor removed ants. 11.10 hrs.</li> </ul>	06.04.02 <ul style="list-style-type: none"> <li>• Littering food packaging. 13.00 hrs.</li> </ul> 07.04.02





## Section Two

### *Infrastructure Inventory and Profile*



# SECTION TWO

- 
- Site Infrastructure Inventory
  - Site Information and Signage
-

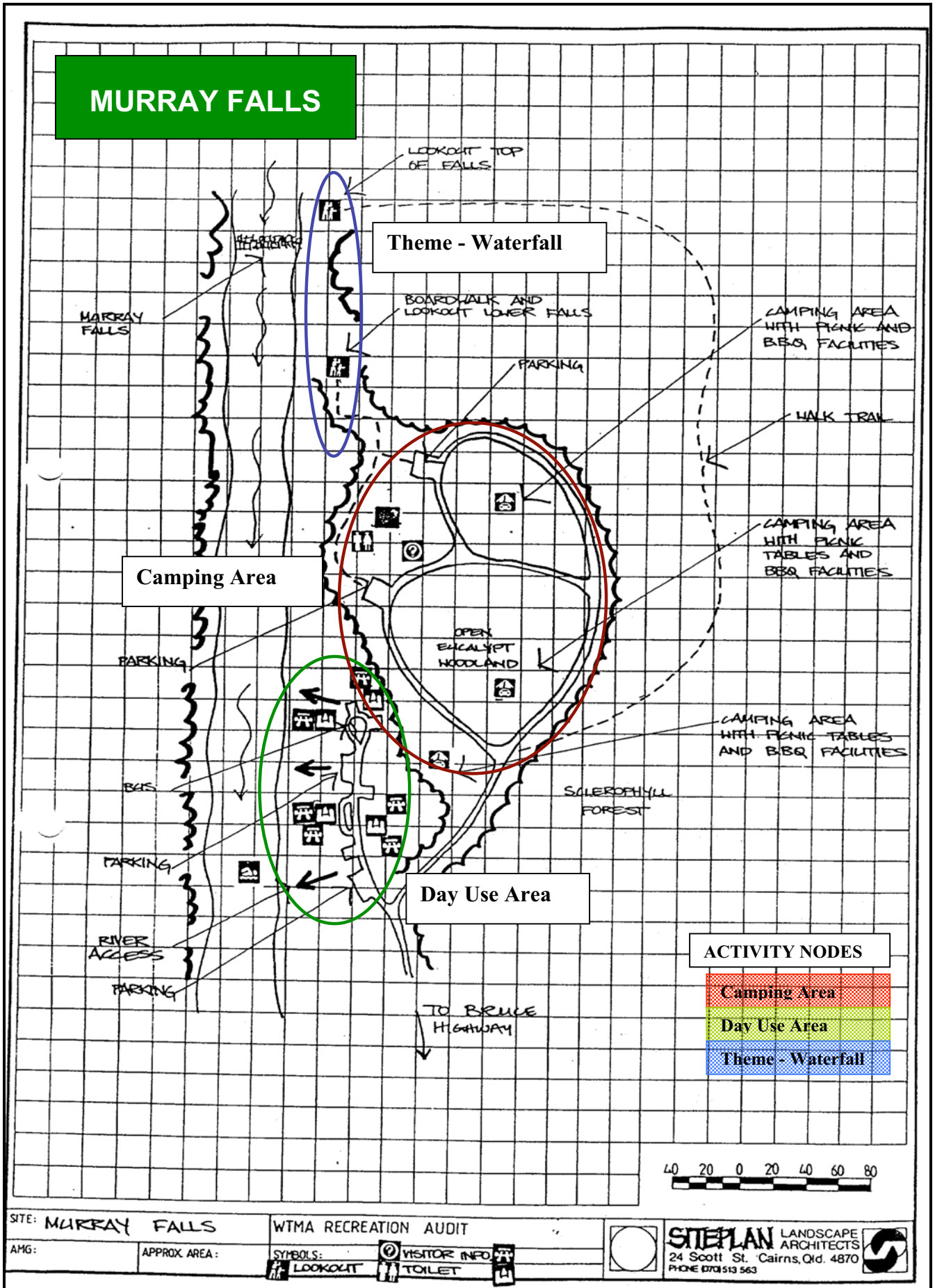


Figure 1: Murray Falls site map and activity nodes (Source: SitePlan 1993).

## Site Infrastructure Inventory

## Key Findings

The following table is a summary version of the inventory of features/facilities recorded at the three site activity nodes. An inventory was first undertaken in 1999(yellow shading) and repeated at time of distribution of questionnaires in 2001/02.

<b>MURRAY FALLS</b>		Wet Tropics Site No.: 96		Management Agency: DNR 1999; EPA/QPWS 2001	
		Dates Assessed: April 1999 and 22 <sup>nd</sup> September 2001			
<b>Site Parameters</b>	<b>1999</b>	<b>2001</b>	<b>1999</b>	<b>2001</b>	<b>Sept. 2001 – Sept. 2002</b>
Annual vehicle/visitor #	Vehicles = 12 228	Visitors = 42 798			Vehicles = 11,696
Site Access:	Road				Visitors = 31,462
Road Type:	Unsealed all weather				Road
Road Conditions:	Minor erosion / few potholes				Unsealed all weather (Access road = 2.4kms)
					Minor erosion/no potholes
	<b>Day Use Area</b>		<b>Camp Area</b>		<b>Theme - Waterfall</b>
<b>Facilities / Infrastructure</b>	<b>1999</b>	<b>2001</b>	<b>1999</b>	<b>2001</b>	<b>1999</b>
Landscaping:	Hard	Hard	Hard	Hard/Soft	Hard
Signage*:					
Corporate Identity	-	Absent	-	Absent	-
Visitor Orientation	-	6	-	6	-
Visitor Advice	-	4	-	4	-
Regulatory	-	2	-	2	-
Interpretive	-	Absent	-	0	-
Foreign Language	-	Absent	-	Absent	-
Capacity/Description:	5 picnic areas, approx 20 seating spaces	5 picnic areas, approx 20 seating spaces	Camp sites category: near vehicle, approx 56 seating spaces	5 major locations; all near vehicles;	Boardwalk to waterfalls
*For full signage details and inventory see next page					Boardwalk to waterfalls
<b>Amenities / Utilities</b>					
Toilets:	Absent	Absent	Septic	Septic	Absent
Showers:	Absent	Absent	2 cold	1 cold	Absent
Bins:	3 with lids	5 with lids	15 with lids	13 with lids	Absent
Water:	Present	Absent	9 taps	8 taps	Absent
Power:	Absent	Absent	Absent	Absent	Absent
Telephone:	Absent	Absent	Absent	Absent	Absent
Other:	3 wood BBQs, 5 tables	3 wood BBQs, 5 tables with benches, firewood store	2 fire sites, 10 wood BBQs, 1 fire wood store, 13 tables, 1 shelter shed	9 fire sites, 2 fire wood store, 3 wood BBQs, 12 tables, 1 shelter shed	Absent
<b>Appeal</b>					
Attractiveness:					
Naturalness (within)	Medium	Medium	Medium	Medium	High
Naturalness (surrounds)	Medium	Medium	Medium	Medium	High
Nuisance insects	Low	Nil	Nil	Nil	High
Built environment	High	High	Medium	Medium	High
Shade	50%	70%	50%	40-60%	80%
Noise (human origin):	Nil	Low	Nil	Low	Nil
<b>Biophysical</b>					
Landform:	Level		Gentle incline		Gentle/Moderate incline
Vegetation:	Sclerophyll		Sclerophyll		Sclerophyll
Geology:	Granites		Granites		Granites
Water body:	River (fresh)		Nil		River (fresh)
<b>Impact Assessment</b>					
Condition Indicators:					
Litter (visual impact)	Nil	Nil	Nil	Low	Nil
Litter (amount)	Nil	<5 items	<5 items	6-20 items	Nil
Litter (type)	Nil	Paper, plastic	-	Plastic, paper	Nil
Waste Management	Bins empty and clean	Bins empty and clean	Bins empty and clean	Bins empty and clean	NA
Wear on facilities	Low	Low	Low	Low	Low
Vandalism / graffiti	Nil	Low	-	Low	-
<b>Environmental Indicators:</b>					
Soil erosion	Low	Low	Medium	Medium	Nil
Exotic weeds	High	Medium	High	Medium	Nil
Exotic ornamentals	Nil	Nil	Nil	Low	Nil
Vegetation	Low break/mutilation	Low break/mutilation	Med. break/mutilation	Med. break/low mutilation	Low break/mutilation
Wildlife	No evidence of habituation	Absent	No evidence of habituation	Absent	No evidence of habituation
<b>Additional Notes:</b>	Weed infestation extensive through surrounding area. Good roads (gravel) (1999). Picnic area consists of: 5 car park areas, 3 picnic areas and 3 river access points.		Weed infestation extensive through surrounding area (1999). Many exotics eg. Pawpaw, pineapple, passionfruit, ginger along edges (2001/2).		Intensive assessment undertaken on walking trail to top of waterfalls in both 1999 & 2001 /02. Separate report has these details (Bentrupperbäumer & Reser 2000 and Wilson 2002).

## Site Infrastructure Inventory

## Details

### A. Day Use Area (lower riverside area)

**River Access:** Three well defined river access points (cement steps); three associated and well defined parking areas with two, three and six bays; two bins.

**Picnic Area:** Three picnic areas; one firewood storage area

Facilities	Picnic Area #1 (River Side)	Picnic Area #2 (Camp Side)	Picnic Area #3 (River Side)
Tables	2	2	1
Sitting Benches	8	8	4
BBQ (brick)	1	1	1
Wood store/table (brick)	1	1	1
Bins (plastic inserts)	2	2	1
Chopping Blocks	1	1	-
Parking Areas	1	1	1
Parking Bays	4	2	3

### B. Camping Area (upper high ground area)

**Amenities Area:** Toilet block; shower block

**Camp Area:** Five broad camp areas defined by road; no numbered camp sites; no defined parking areas; no vehicle barriers; one firewood storage area; Camp registration

Facilities	Camp Area #1 (1 <sup>st</sup> River Side)	Camp Area #2 (1 <sup>st</sup> Middle)	Camp Area #3 (2 <sup>nd</sup> River Side)	Camp Area #4 (Top Middle)	Camp Area #5 (Forest Side)
Tables	2	-	2	3	5
Sitting Benches	4	-	4	6	10
Fire Ring & plate	3	2	1	2	1
BBQ (brick)	-	-	-	-	3
Wood store/table (brick)	-	-	-	-	3
Bins	4	2	2	3	4
Taps	2	2	2	2	4
Chopping Blocks	2	2	1	2	4
Shelter Shed + benches	-	1 + 2	-	-	-

### C. Theme – Boardwalk to Waterfalls

Facilities	#
Tables	1
Sitting Benches	3
Bins	1
Taps	1

## A. Day Use Area



**Picnic Area #1**



**Picnic Area #2**



**River Access**

## B. Camping Area



**Fire rings**



**Shelter Shed**



**Showers**

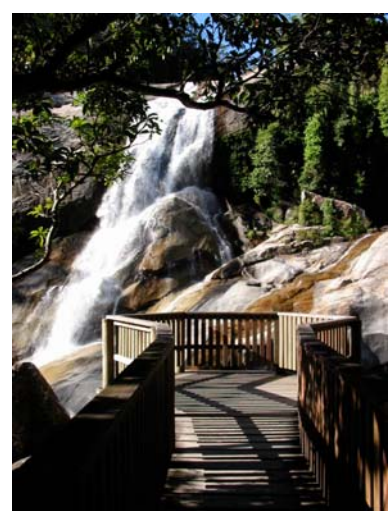
## C. Theme – Boardwalk to Waterfall



**Picnic Area at start of Boardwalk**



**Start of Boardwalk**



**Boardwalk Lookout**

*Note: Details of signage next section.*

## Site Information and Signage

The information and signage for the five key components of the site (road access, boardwalk, walking tracks, camp ground area and day use area) were grouped, as best as possible, according the Department of Natural Resource's five broad sign categories. The inventory includes numbers of actual sign structures and total information types according to these categories and within each of the activity nodes.

### Key Findings

- A total of **60 sign structures** containing **83 separate sets of information** relevant to Murray Falls were recorded at the site and along the main and access roads.
- Most of these signs (42.2%) were for the purpose of **visitor orientation**;
- The only **interpretive** signage present focused on **Aboriginal cultural information** and was located along the walking track;
- **No foreign language** signage was present at Murray Falls.

**Table 1:** Number and type of signs at Murray Falls.

Sign Category	Main Road (Bruce H'way)	Access Road (2.4km gravel)	Day Use /Picnic Area	Camping Area	Walking Track	Theme - Boardwalk	TOTAL
Interpretive					11 <i>(Aboriginal cultural)</i>		11
Visitor orientation	8	3	9	9	2	4	35 <i>(19)</i>
Visitor advice	8		4	5	1	1	19 <i>(12)</i>
Regulatory		3	3	1	1	5	13 <i>(5)</i>
Corporate Identity		5					5 <i>(3)</i>
<b>TOTAL Information Types</b>	<b>16</b>	<b>11</b>	<b>16</b>	<b>15</b>	<b>15</b>	<b>10</b>	<b>83</b>
<b>#Sign Structures</b>	<b>8</b>	<b>7</b>	<b>12</b>	<b>10</b>	<b>15</b>	<b>8</b>	<b>60</b>
<i>SitePlan 93</i>							<i>(39)</i>

### Comparative Data Set

SitePlan undertook an audit of signage at Murray Falls in April 1993. Information from this audit has been included in the above table (*italics and parenthesis*) for comparative purposes.

**Main Road** (Bruce Highway)

**Visitor Orientation Signs (8)**



Two north entrance; two Billyana entrance.



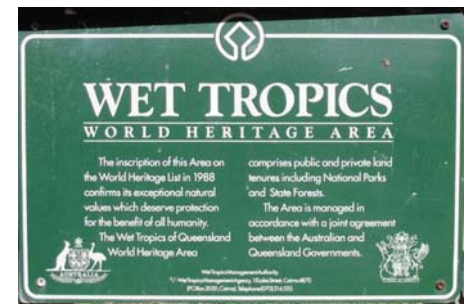
Two north entrance; two Billyana entrance

**Access Road** (2.4km gravel road)

**Visitor Orientation Signs (1) and Regulatory Sign (1)**



**Corporate Identity Signs (6) and Regulatory Sign (1)**





## Day Use / Picnic Area Signage

### Visitor Orientation Signs (6)



### Visitor Advice Signs (4)



### Regulatory Signs (2)



## Camping Area Signage

### Visitor Orientation Signs (6)



### Visitor Advice Signs (5)



## Walking Track Signage

### Visitor Orientation Signs (2)



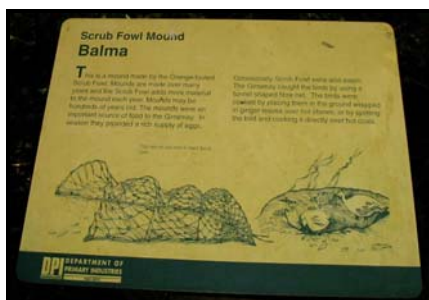
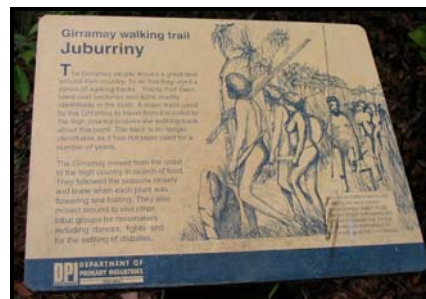
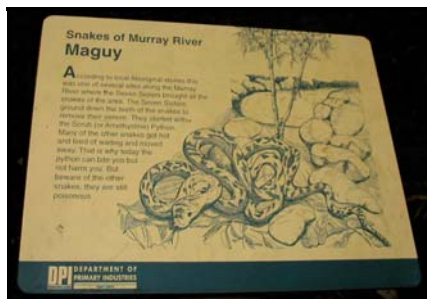
Visitor Advice Signs (1)



Regulatory Signs (1)



Interpretive Signs (Cultural) (11)



## Theme – Boardwalk Signage

### Visitor Orientation Signs (2)



### Visitor Advice Signs (3)



### Regulatory Signs (3)





## Section Three

### *Vehicle and Visitor Monitoring*



- 
- Vehicle and Visitor Records
  - Traffic Counter Data
-

### Murray Falls: Summary Table of Visitor and Vehicle Data

	Visitors					Vehicles				
	Major Type	# in 8hrs	# per vehicle	Highest # at one time	Time: hours	Major Type	# in 8hrs	Highest # at one time	Time : hours	Average Length of Stay
22 Sept 2001	Couples 61%	66	2.28	20	1600	Cars 52%	29	9	1600	94 mins
23 Sept		88	2.32	38	1430		38	16	1350	138 mins
6 April 2002	singles 38%	<b>145</b>	2.90	<b>98</b>	1430	Cars 44%, 4WD 36%	<b>50</b>	14	1430	197 mins
7 April	couples 28%	131	2.85	73	1330		46	<b>24</b>	1100	195 mins

Note: Data based on four x eight hour observations of vehicles and visitor occupancy in September 2001 and April 2002.

### Murray Falls: Summary Table of Traffic Counter Data

	Visitors					Vehicles		
	Average	Highest #	Time Of Highest	Lowest #	Time Of Lowest	Average	Highest #	Lowest #
<b>Yearly</b>	<b>31,462 visitors</b>					<b>11,696 vehicles</b>		
<b>Monthly</b>	2,545	3,475	January 2002	1,498	February 2002	946	1,292	557
<b>Weekly</b>	605	1337	December 2001, Week 4	304	February 2002, Week 2	225	497	114
<b>Daily : Weekdays</b>	75	282	26 <sup>th</sup> December 2001	19	25 <sup>th</sup> February 2002	28	105	7
<b>Daily: Weekends</b>	110	280	31 <sup>st</sup> March 2002	30	16 <sup>th</sup> February 2002	41	104	11

Note: Data based on the continuous recording of traffic using the traffic counter/metro count system from September 2001 to October 2002.

## Vehicle and Visitor Records

## Key Findings

Data for these records were established from eight hours of continuous observations of vehicles and vehicle occupancy during each day of the survey distribution periods, Stage 1 (22<sup>nd</sup> & 23<sup>rd</sup> September 2001) and Stage 2 (6<sup>th</sup> & 7<sup>th</sup> April 2002). This is the first time this type of data has been collected at Murray Falls and so previous data is unavailable for comparative purposes.

### Stage 1: 22<sup>nd</sup> and 23<sup>rd</sup> September 2001

#### *Pattern of access to and use of Murray Falls:*

#### **Figure 1**

##### **General**

- **Vehicle Type:** More than half of the vehicles using the site over the two days of observation were *cars (52%)*.
- There were *no commercial coaches/buses* using Murray Falls during this period.
- **Visitor Category:** Murray Falls appears to be favoured by *independent visitors with couples* (two people) making up the major visitor category over these two days (60.6%).
- Vehicle and visitor numbers were higher on the second day than on the first day of observation.

##### **Day 1 (22<sup>nd</sup> September 2001 - Saturday)**

- There were *three distinct peaks* in vehicle and visitor numbers around *1200, 1500 and 1600 hours*;
- The highest number of visitors at the site at any one time was *20 at 1600 hours*. This number declined to 17, the number of visitors at the site through till after 1700 hours.
- The highest number of vehicles at the site at any one time was *9 at 1600 hours*. The number of vehicles at the site remained below 10 all day.

##### **Day 2 (23<sup>rd</sup> September 2001 - Sunday)**

- There were *two distinct peaks* in vehicle and visitor numbers at *1200 hours* and *between 1400 and 1500 hours*.
- The highest number of visitors at the site at the same time was *38 at 1430 hours*.
- For most of the day the number of visitors at the site at any one time remained above ten. Between 1100 and 1530 hours this increased to above 20.
- The highest number of vehicles at the site at any one time was *16 at 1350 hours*. For most of the day number of vehicles at the site remained between 10 and 16.

#### *Length of Stay:*

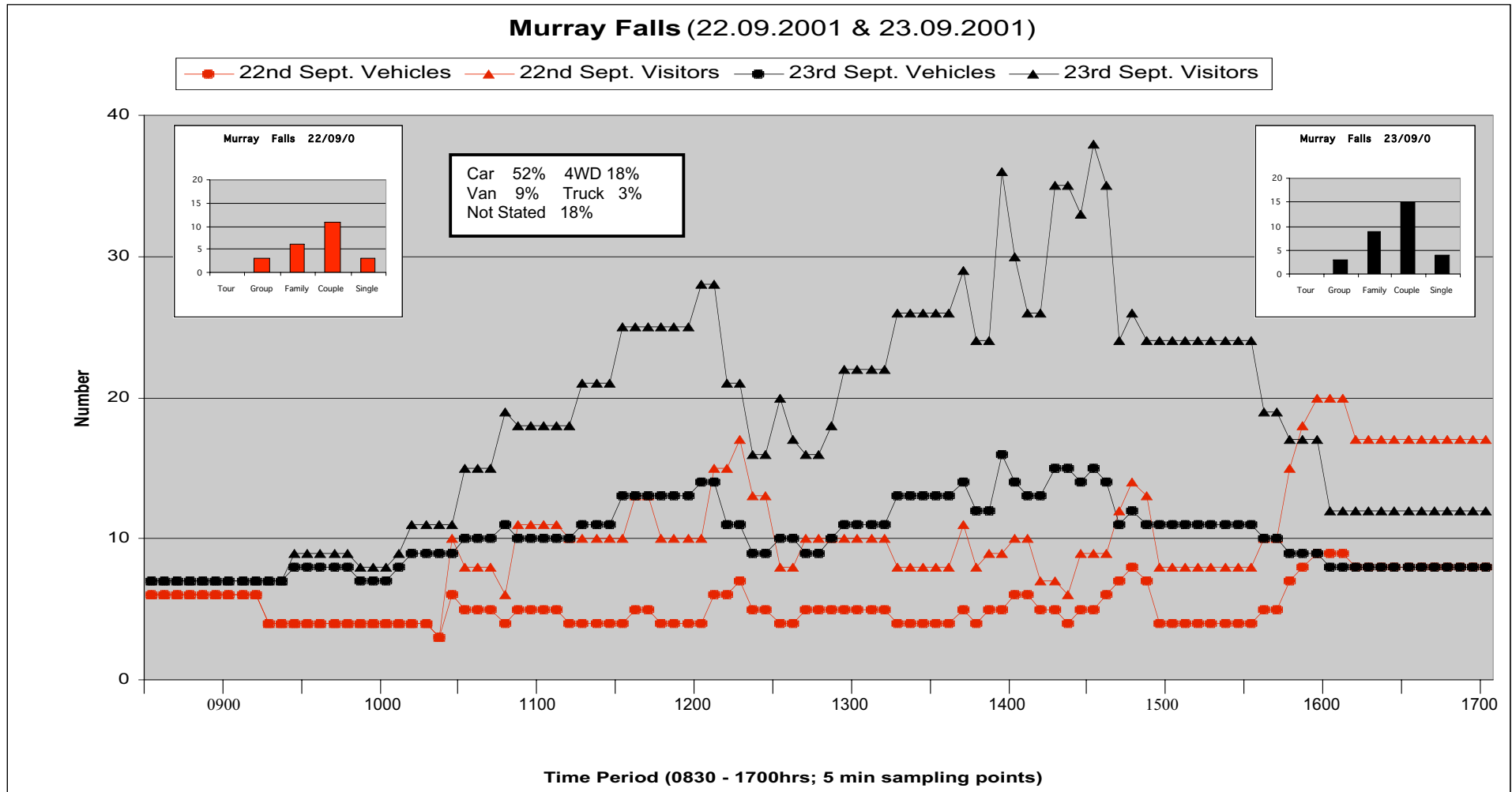
#### **Figures 2 and 3**

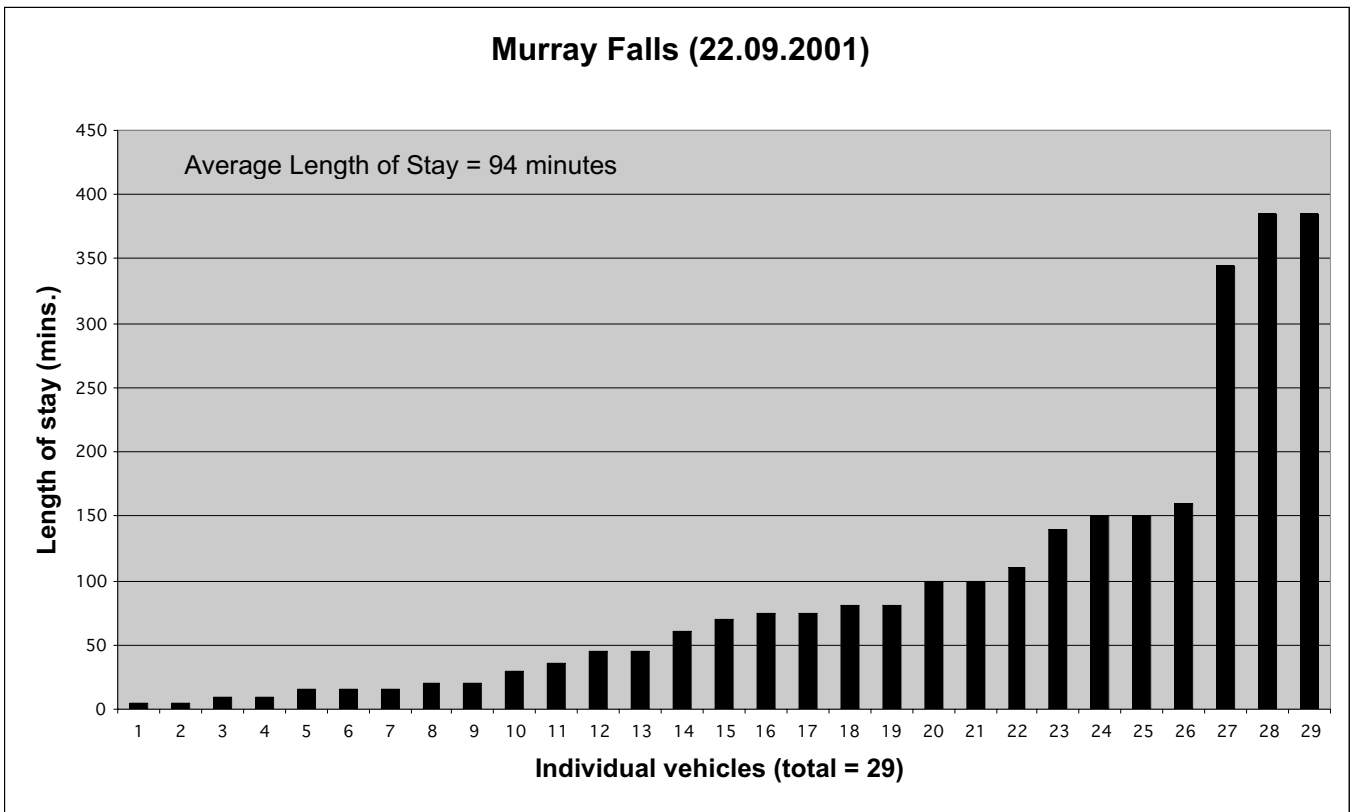
- There were fewer vehicles and visitors observed at the site on Day 1 (29 vehicles, 66 visitors) compared to Day 2 (38 vehicles, 88 visitors).
- The average length of stay was *94 minutes* on Day 1, and *138 minutes* on Day 2.
- On Day 1, 55.2% of the vehicles stayed longer than 50 minutes. On Day 2 this had increased to 65.8%.



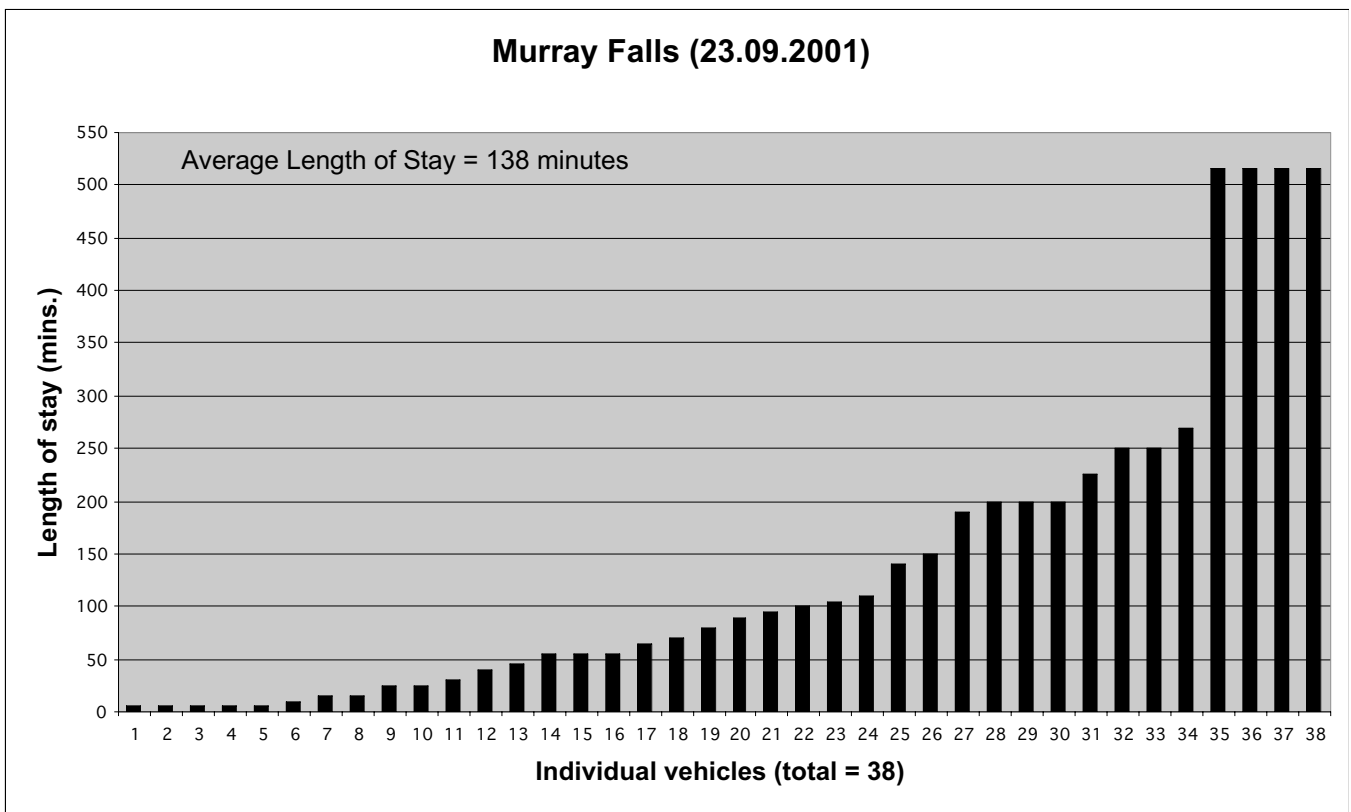
### VEHICLE AND VISITOR COUNT DATA: MURRAY FALLS

**Figure 1:** Records for vehicles and visitors over two eight hour period.





**Figure 2:** Length of stay of each vehicle at Murray Falls on Day 1 – 22.09.2001



**Figure 3:** Length of stay of each vehicle at Murray Falls on Day 2 – 23.09.2001

## Vehicle and Visitor Records

## Key Findings

The following key findings are from data recorded during the 2 x 8 hour observation periods during 6<sup>th</sup> and 7<sup>th</sup> April 2002.

### Stage 2: 6<sup>th</sup> and 7<sup>th</sup> April 2002

#### *Pattern of access to and use of Murray Falls:*

#### Figure 4

##### General

- **Vehicle Type:** *Cars* (44%) were the **major vehicle type** recorded at the site over the two days of observation. However, 4WD vehicles (36%) were also a frequently recorded vehicle type.
- There were **no commercial coaches/buses** using Murray Falls during this period.
- **Visitor Category:** Murray Falls appears to be favoured by **independent visitors** with **singles and couples** making up the major visitor categories for these two days (37.9% and 28.4%).
- Vehicle and visitor numbers were higher on Day 1 (Saturday) than on Day 2 (Sunday).

##### Day 1 (6<sup>th</sup> April 2002 - Saturday)

- Vehicle and visitor numbers, in general, climbed gradually before rising sharply around 1400 hours.
- The highest number of visitors recorded at the site at the one time was **98 at 1430 hours**. For one hour from this time visitor numbers remained above 80.
- From 1200 hours till 1700 hours visitor numbers at the site at any one time remained above 30.
- For the whole observation period vehicles and visitor numbers did not decline below ten.

##### Day 2 (7<sup>th</sup> April 2002 - Sunday)

- Vehicle and visitor numbers followed a similar pattern to the previous day with a gradual increase evident before rising sharply around 1330 hours.
- The highest visitor number recorded at the site at the one time was **73 at 1330 hours**. The visitor number remained above 60 for the remaining observation period.
- For the whole observation period vehicles and visitor numbers did not decline below ten.

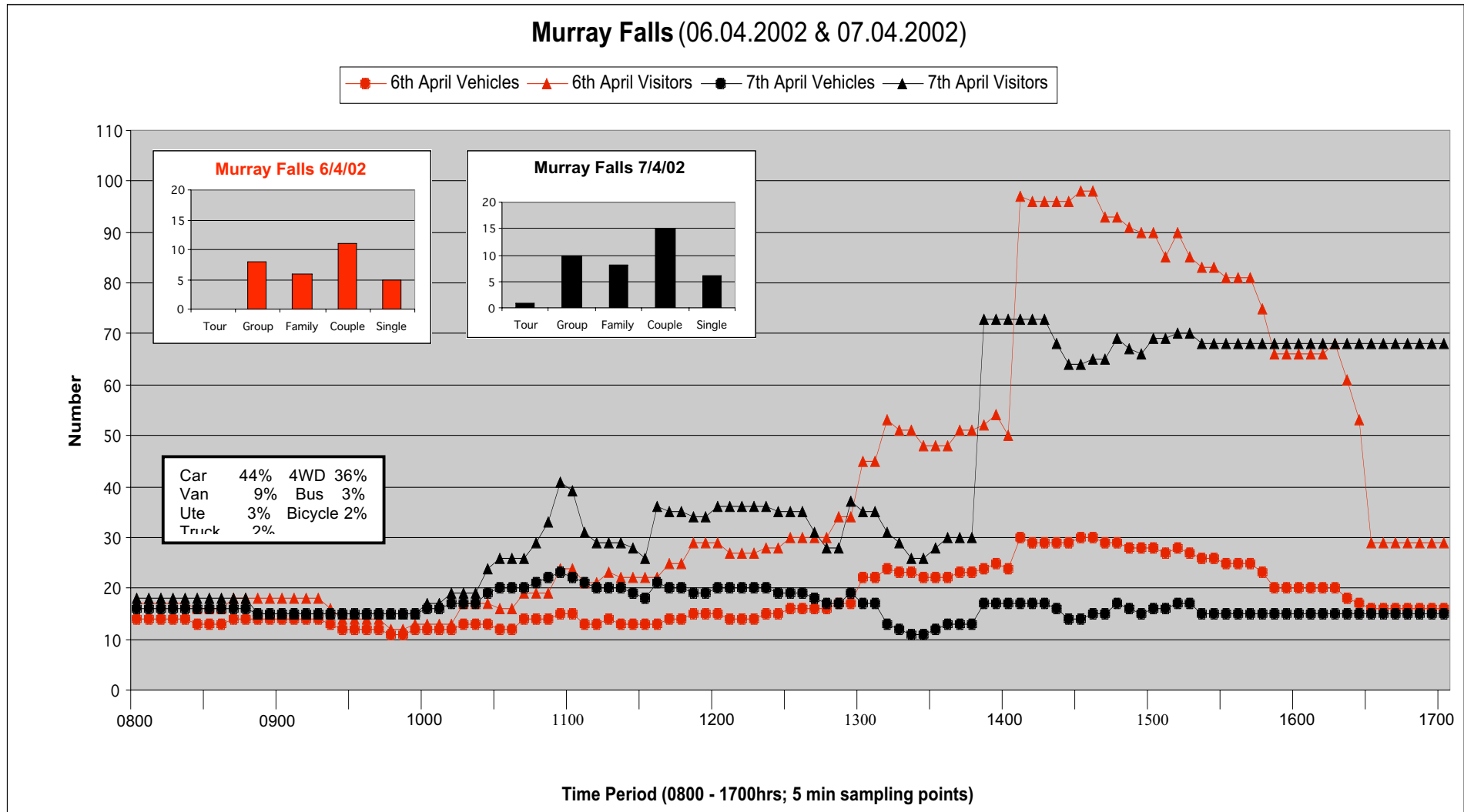
#### *Length of Stay:*

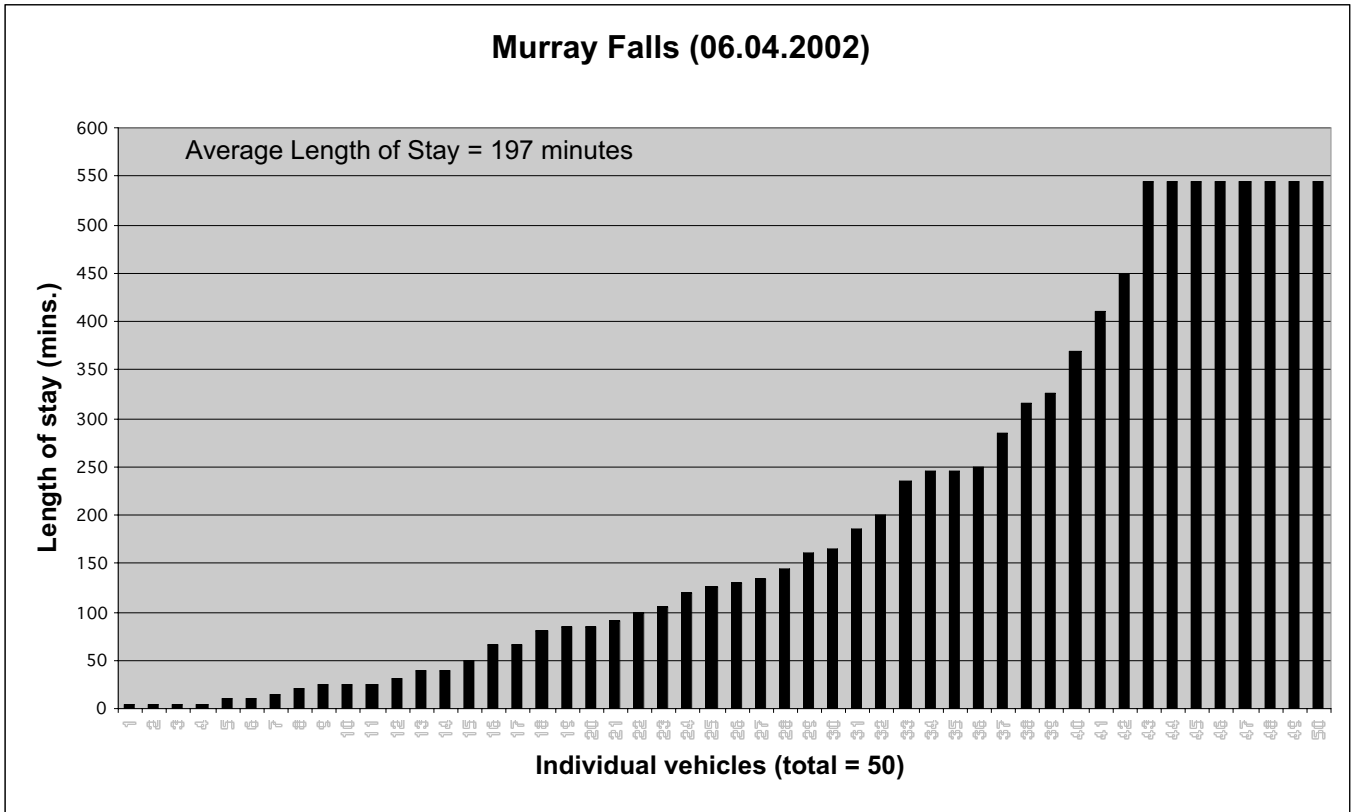
#### Figures 5 and 6

- There were more vehicles and visitors at the site on Day 1 (50 vehicles, 145 visitors) compared to Day 2 (46 vehicles, 131 visitors).
- Unlike findings made during the dry season (September 2001), the average length of stay reported for the two days of observation during the wet season were highly comparable. The average length of stay reported for the first and second days were **197 and 195 minutes respectively**.
- On Day 1, 72% of the vehicles stayed 50 minutes or longer. On Day 2 this had increased to 80%.

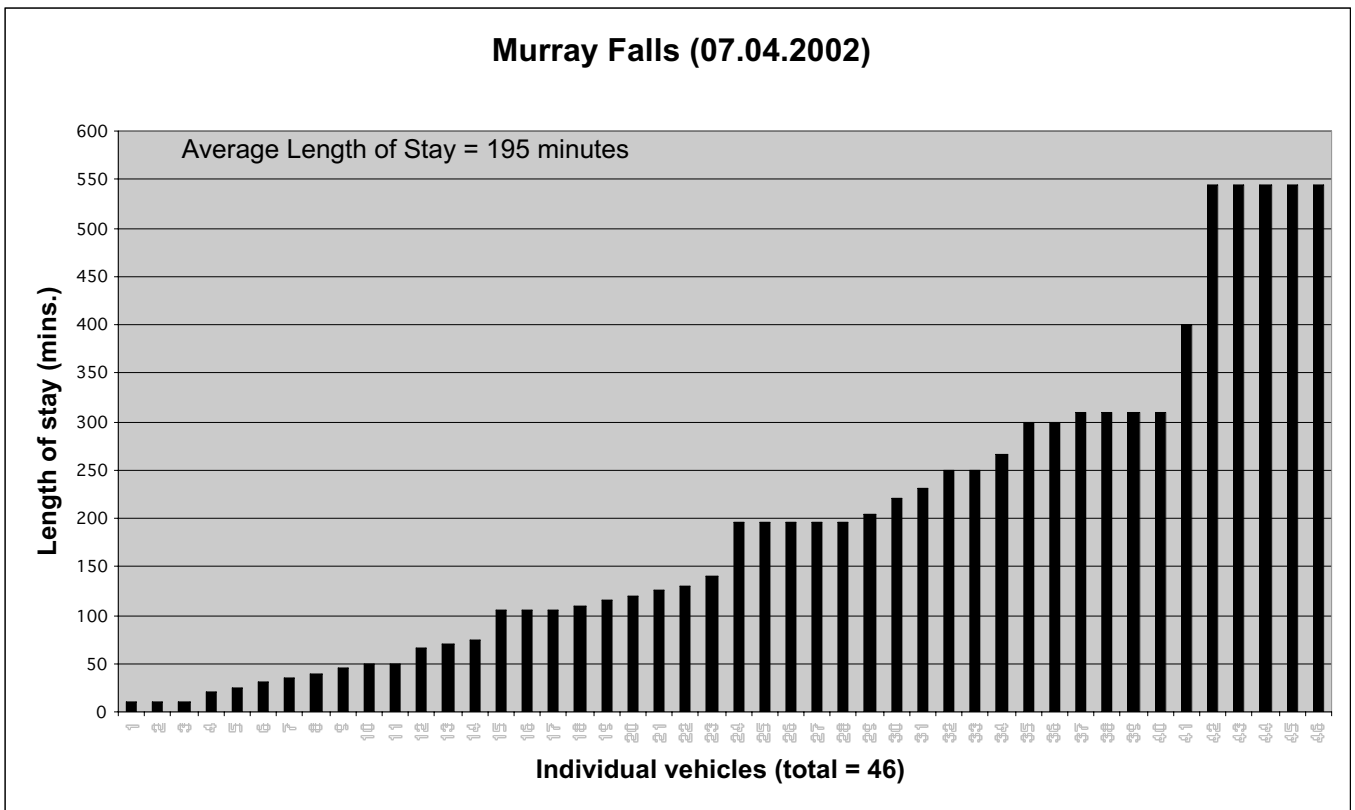
## VEHICLE AND VISITOR COUNT DATA (WET): MURRAY FALLS

**Figure 4:** Records for vehicles and visitors over two eight hour periods





**Figure 5:** Length of stay of each vehicle at Murray Falls on Day 1 – 6<sup>th</sup> April 2002



**Figure 6:** Length of stay of each vehicle at Murray Falls on Day 2 – 7<sup>th</sup> April 2002

## Traffic Counter Data

## Key Findings

The traffic counter was installed at Murray Falls for 12 months (September 2001 – September 2002). The following key findings are associated with this data set.

**Yearly Estimate = 11,696 vehicles and 31,462 visitors**

### Monthly Records: Figure 7

- On average **946 vehicles** (range = 557 – 1292) and **2,545 people** (range = 1498 – 3475) visited Murray Falls each month.
- **October, December 2001, and January, August 2002** received the **highest** visitation rates during which period vehicle numbers exceeded 1,100. Even though the numbers for October, January and August were higher due to these being five week months, they nevertheless were, on average, representative of the busiest periods.

### Weekly Records: Figure 8

- On average **225 vehicles** (range = 114 – 497) and **605 people** (range = 304 – 1337) visit Murray Falls each week.
- There were four discernible periods of increased vehicular traffic levels recorded during sampling: **early October – Week 1** (school holidays), **late December/early January – Week 4** (Christmas/New Year), **late March – Week 4 / early April – Week 1** (Easter), and **late September – Week 4 / early October 2002 – Week 1** (school holidays).
- The highest number of vehicles and visitors was in **December 2001, Week 4**, during which week **497 vehicles and 1337 visitors** used this site.

### Daily Records : Figure 9 and Table 1

- On average, **32 vehicles** (range = 7 – 105) and **82 people** (range = 19 – 284) visit Murray Falls each day. **Average weekday use = 28.2 vehicles per day;**
- As expected, weekends are the busiest times with Sunday recording, on average, 46 vehicles (range 15 – 105), and 123 people (highest number = 282 people on 26<sup>th</sup> December 2001 and 280 people on 31<sup>st</sup> March 2002). **Average weekend use = 41 vehicles per day.**

### Comparative Traffic Counter Data

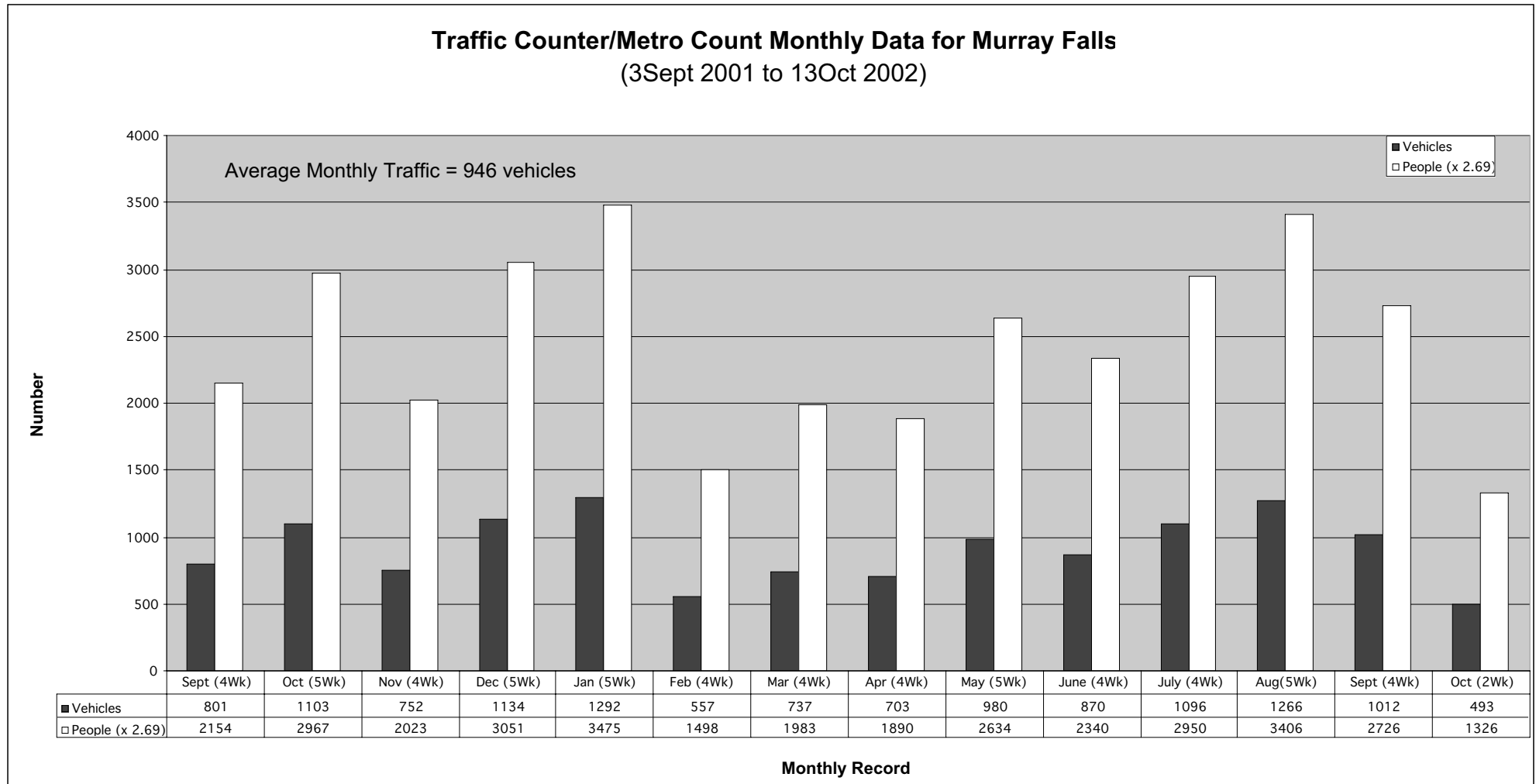
#### A. Estimated visitor use at Murray Falls 1992/93: (Source: Manidis Roberts 1993/94)

- vehicles = 11,251; people = 31,504 (calculated on 2.8 people per vehicle)
- Average weekend use = 22.7 vehicles
- Average weekday use = 18.7 vehicles

#### B. Estimated visitor use at Murray Falls 1998: (Source: Bentrupperbäumer 2000)

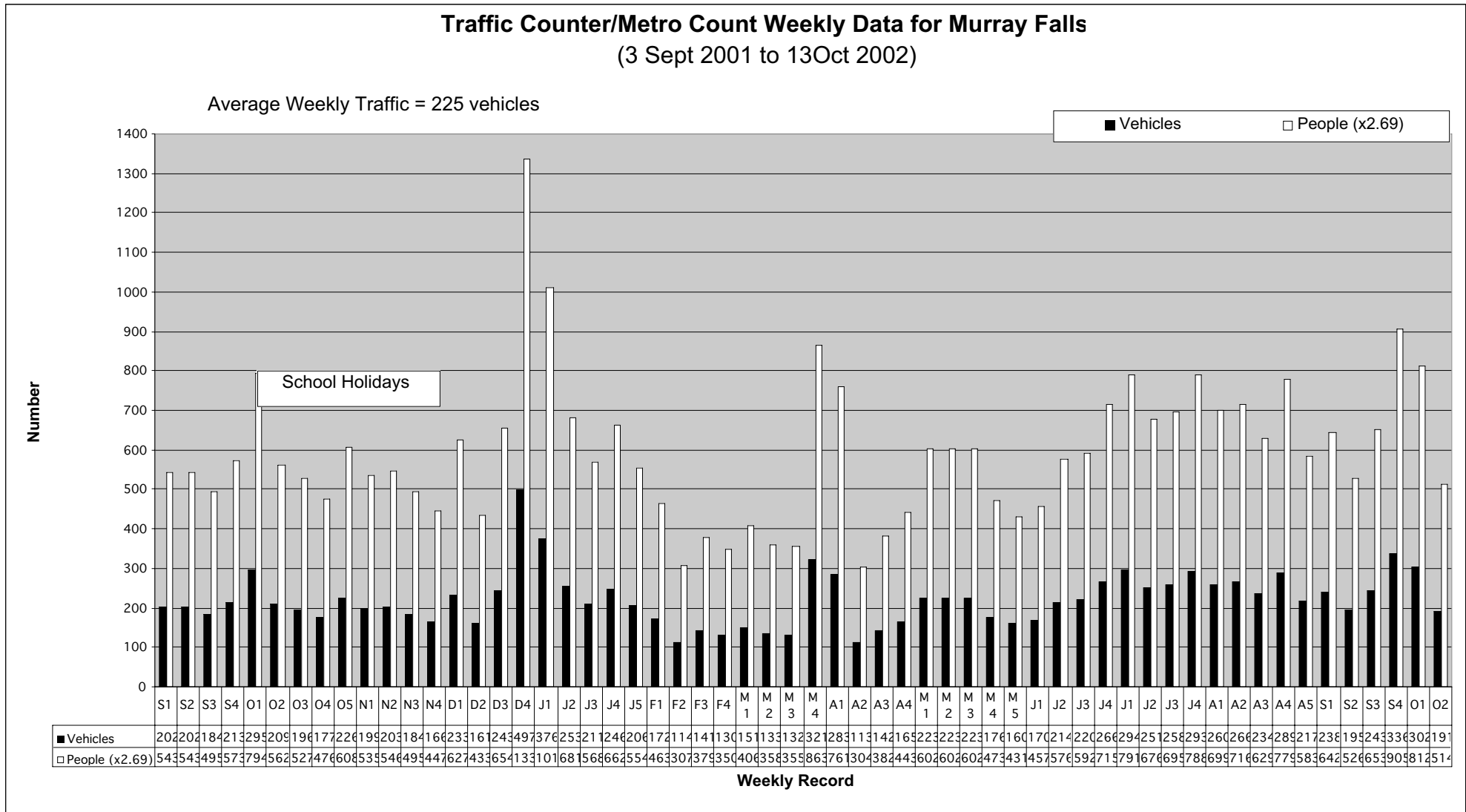
- vehicles = 12,228; people = 42,798 (calculated on 3.5 people per vehicle)

### TRAFFIC COUNTER/METRO COUNT DATA: MURRAY FALLS



**Figure 7:** Monthly Records for Vehicles and Visitors

## TRAFFIC COUNTER/METRO COUNT DATA: MURRAY FALLS



**Figure 8:** Weekly Records for Vehicles and Visitors



## TRAFFIC COUNTER/METRO COUNT DATA FOR MURRAY FALLS

**Table 1:** Daily Records of Vehicles and Visitors at Murray Falls

<b>SEPTEMBER 2001</b> <span style="float: right;">Data highlighted in yellow are the daily averages for this month. Traffic counter was not installed until Week 3.</span>														
2001	MON		TUE		WED		THU		FRI		SAT		SUN	
	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People
Wk 1 3-9Sept	24	65	28	75	28	75	29	78	30	81	22	59	41	110
Wk 2 10-16Sept	24	65	28	75	28	75	29	78	30	81	22	59	41	110
Wk 3 17-23Sept	23	62	28	75	26	70	21	56	23	62	26	70	39	105
*Wk 4 24-30Sept	25	67	28	75	29	78	36	97	36	97	18	48	42	113
<b>OCTOBER 2001</b>														
2001	MON		TUE		WED		THU		FRI		SAT		SUN	
	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People
*Wk 1 1-7Oct	34	91	49	132	47	126	41	110	47	126	32	86	48	129
Wk 2 8-14Oct	24	65	20	53	25	67	20	54	27	72	38	102	56	151
Wk 3 15-21Oct	26	70	24	65	23	62	20	54	18	48	41	110	46	124
Wk 4 22-28Oct	14	38	21	56	16	43	24	65	25	67	31	83	47	126
Wk 5 29-4 Nov	19	51	31	83	38	102	35	94	21	56	33	89	51	137
<b>NOVEMBER 2001</b>														
2001	MON		TUE		WED		THU		FRI		SAT		SUN	
	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People
Wk 1 5-11Nov	18	48	17	46	22	59	24	65	31	83	35	94	53	143
Wk 2 12-18Nov	25	67	23	62	18	48	20	54	26	70	49	132	45	121
Wk 3 19-25Nov	25	67	26	70	30	81	22	59	19	51	29	78	34	91
Wk 4 26-2Dec	14	38	18	48	23	62	15	40	25	67	31	83	42	113
<b>DECEMBER 2001</b> <span style="float: right;">Blue = Public Holiday</span>														
2001	MON		TUE		WED		THU		FRI		SAT		SUN	
	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People
Wk 1 3-9Dec	21	56	34	91	22	59	20	54	23	62	43	116	72	194
Wk 2 10-16Dec	27	73	11	30	31	83	13	35	26	70	23	62	32	86
*Wk 3 17-23Dec	35	94	36	97	38	102	20	54	25	67	37	100	53	143
*Wk 4 24-30Dec	23	62	60	161	105	282	61	164	89	239	82	221	79	213

<b>JANUARY 2002</b> Blue = Public Holiday														
2002	MON		TUE		WED		THU		FRI		SAT		SUN	
	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People
*Wk 1 31Dec-6Jan	44	118	65	175	33	89	51	137	44	118	63	169	77	207
*Wk 2 7-13Jan	17	46	35	94	32	86	38	102	32	86	36	97	65	175
*Wk 3 14-20Jan	32	86	38	102	41	110	28	75	24	65	16	43	34	91
*Wk 4 21-27Jan	33	89	21	56	20	54	21	56	24	65	53	143	75	202
Wk 5 28-3Feb	66	178	27	73	18	48	23	62	18	48	26	70	30	81
<b>FEBRUARY 2002</b>														
2002	MON		TUE		WED		THU		FRI		SAT		SUN	
	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People
Wk 1 4-10Feb	13	35	16	43	17	46	26	70	18	48	41	110	42	113
Wk 2 11-17Feb	22	59	21	56	21	56	13	35	13	35	11	30	15	40
Wk 3 18-24Feb	10	27	14	38	16	43	23	62	19	51	31	83	29	78
Wk 4 25-3Mar	7	19	15	40	13	35	17	46	16	43	31	83	33	89
<b>MARCH 2002</b> Data highlighted in yellow are daily averages for this month.														
2002	MON		TUE		WED		THU		FRI		SAT		SUN	
	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People
Wk 1 4-10Mar	17	46	21	56	15	40	26	70	21	56	27	73	25	67
Wk 2 11-17Mar	17	46	15	40	14	38	19	51	16	43	32	86	22	59
Wk 3 18-24Mar	21	56	15	40	21	56	11	30	12	32	46	124	16	43
Wk 4 25-31Mar	16	43	16	43	18	48	24	65	66	178	80	215	104	280
<b>APRIL 2002</b> Data highlighted in yellow are daily averages for this month.														
2002	MON		TUE		WED		THU		FRI		SAT		SUN	
	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People
*Wk 1 1-7Apr	76	204	25	67	46	124	24	65	33	89	37	100	42	113
Wk 2 8-14Apr	14	38	11	30	19	51	12	32	19	51	19	51	20	54
Wk 3 15-21Apr	11	30	19	51	12	32	17	46	21	56	41	110	22	59
Wk 4 22-28Apr	19	51	18	48	26	70	18	48	24	65	32	86	28	75
<b>MAY 2002</b> Data highlighted in green are the daily averages for the overall site data set. Traffic counter was removed during this period for road works.														
2002	MON		TUE		WED		THU		FRI		SAT		SUN	
	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People
Wk 1 29-5May	28	75	27	73	30	81	27	73	29	79	36	98	46	123

Wk2 6-12May	28	75	27	73	30	81	27	73	29	79	36	98	46	123
Wk3 13-19May	28	75	27	73	30	81	27	73	29	79	36	98	46	123
Wk4 20-26May	28	75	17	46	20	54	19	51	20	54	34	91	38	102
Wk5 27-2June	21	56	20	54	22	59	17	46	24	65	24	65	32	86
<b>JUNE 2002</b> Blue = Public Holiday														
<b>2002</b>	<b>MON</b>		<b>TUE</b>		<b>WED</b>		<b>THU</b>		<b>FRI</b>		<b>SAT</b>		<b>SUN</b>	
	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People
Wk 1 3-9June	21	56	22	59	20	54	23	62	20	54	30	81	34	91
Wk 2 10-16June	60	161	29	78	27	73	27	73	16	43	27	73	28	75
Wk 3 17-23June	21	56	23	62	29	78	23	62	35	94	33	89	56	151
*Wk 4 24-30June	31	83	25	67	32	86	36	97	33	89	49	132	60	161
<b>JULY 2002</b> Blue = Public Holiday														
<b>2002</b>	<b>MON</b>		<b>TUE</b>		<b>WED</b>		<b>THU</b>		<b>FRI</b>		<b>SAT</b>		<b>SUN</b>	
	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People
*Wk 1 1-7July	48	129	49	132	51 Tsv	137	29	78	36	97	38	102	43	116
Wk 2 8-14July	42	113	30	81	40	108	38	102	42	113	24	65	35	94
Wk 3 15-21July	30	81	30	81	43	116	34	91	43 Cns	116	39	105	39	105
Wk 4 22-28July	42	113	45	121	61	164	41	110	21	56	43	116	40	108
<b>AUGUST 2002</b>														
<b>2002</b>	<b>MON</b>		<b>TUE</b>		<b>WED</b>		<b>THU</b>		<b>FRI</b>		<b>SAT</b>		<b>SUN</b>	
	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People
Wk 1 29-04Aug	29	78	30	81	38	102	33	89	32	86	34	91	64	172
Wk 2 05-11Aug	42	113	33	89	38	102	42	113	36	97	38	102	37	100
Wk 3 12-18Aug	32	86	31	83	28	75	30	81	40	108	34	91	39	105
Wk 4 19-25Aug	27	73	28	75	33	89	40	108	58	156	50	135	53	143
Wk 5 26-01Sep	31	83	30	81	24	65	34	91	28	75	31	83	39	105
<b>SEPTEMBER 2002</b>														
<b>2002</b>	<b>MON</b>		<b>TUE</b>		<b>WED</b>		<b>THU</b>		<b>FRI</b>		<b>SAT</b>		<b>SUN</b>	
	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People
Wk 1 02-08Sep	30	81	24	65	34	91	30	81	24	65	43	116	53	143
Wk 2 09-15Sep	20	54	27	73	30	81	30	81	24	65	22	59	42	113
Wk 3 16-22Sep	25	67	21	56	26	70	30	81	31	83	56	151	54	145
*Wk 4 23-29Sep	36	97	43	116	43	116	40	108	51	137	49	132	74	199

OCTOBER 2002														
Data highlighted in green is the daily average for the overall site data set.														
2002	MON		TUE		WED		THU		FRI		SAT		SUN	
	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People	Vehicles	People
*Wk 1 30-06Oct	41	110	29	78	44	118	36	97	35	94	40	108	77	207
Wk 2 07-13Oct	25	67	27	73	26	70	14	38	24	65	29	78	46	123
AVERAGES	28	75	27	73	30	81	27	73	29	79	36	98	46	123

Note: \*These dates indicate school holidays.

People estimates are based on vehicle numbers x 2.69, the average number of people in vehicles established from questionnaire, item # 8. Data highlighted in yellow or in green were not included in the overall daily averages.

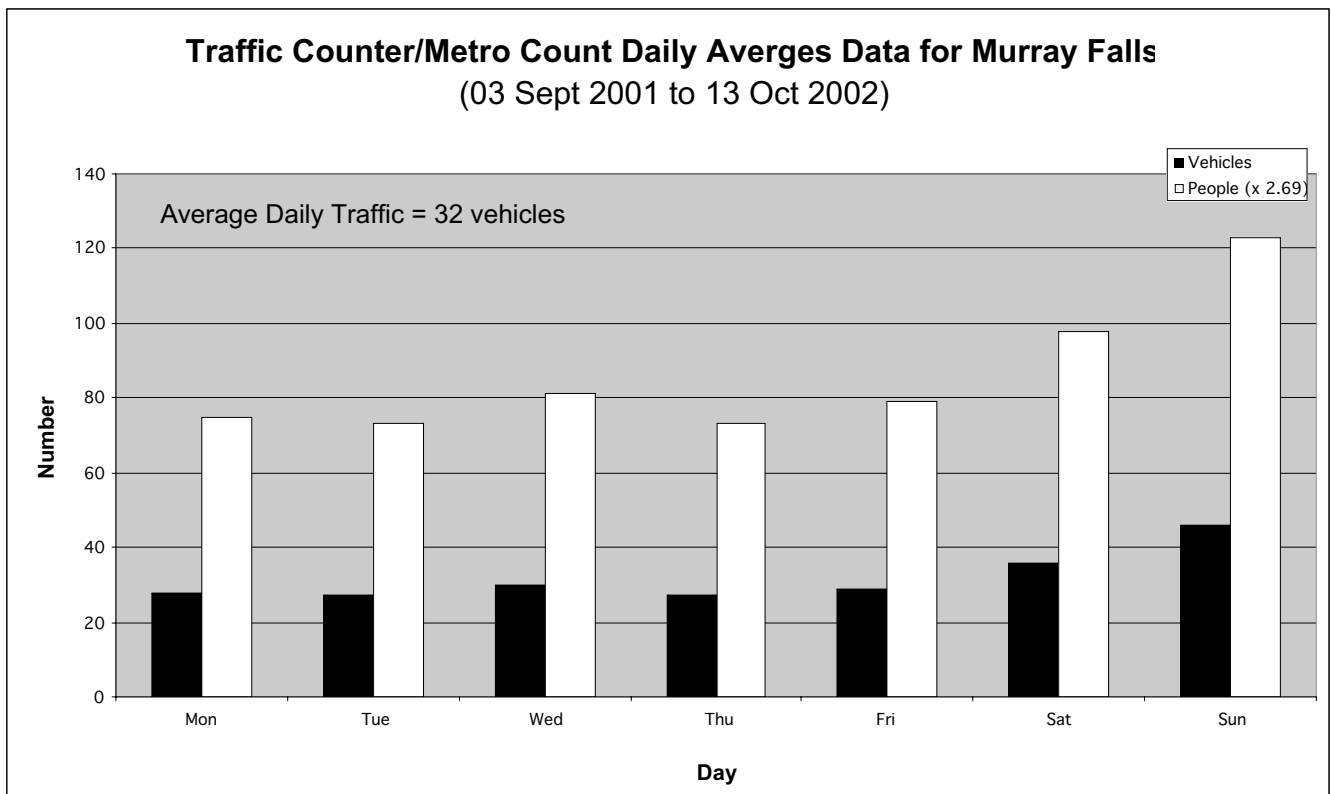


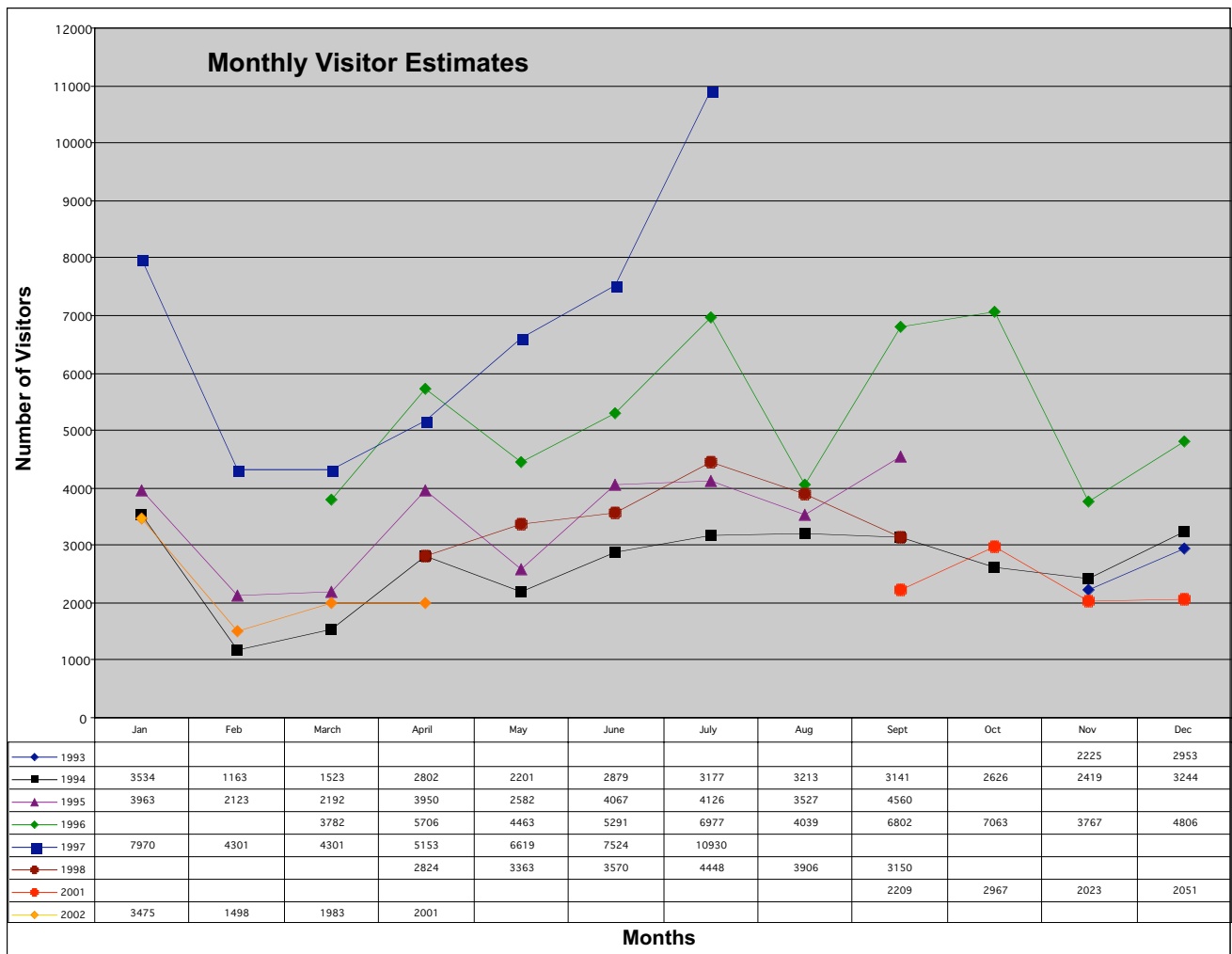
Figure 9: Average daily vehicle and visitor numbers for Murray Falls.

## Comparative Traffic Counter Data

(Source: Manidis Roberts 1993/1994 study, Bentrupperbäumer, 2000, WTMA Traffic Counter Records 1994-1997)

**Figure 10: Monthly visitor estimates established since 1994**

- Visitor estimates for the period 1994-1998 have been based on 3.5 people per vehicle as established by the Manidis Roberts 1993/94 study;
- Visitor estimates for 2001-2002 period have been based on 2.7 people per vehicle as established by this study;
- Visitor estimates were the highest for 1997;
- Visitor estimates for this study period, 2001-2002, and 1994 were the lowest;
- Consistently, the month with the lowest estimates was February.



**Figure 10: Monthly visitor estimates for Murray Falls established from WTMA traffic counter data 1994 – 1997, Bentrupperbäumer 1998 study, and this study, 2001-2002. Data is unavailable for the period 1999 to 2000.**

# Section Four

## *Management Considerations*



# S E C T I O N F O U R

- 
- Presentation
  - Opportunities
  - Specific Problems & Issues
-

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## *Presentation*

- **Significance**                    *WHA Status, Natural & Cultural Attributes, Historical Context*
  - **Management Agency**   *Identity and Presence, Conservation and Protection*
  - **Information**                    *Sources and Signage*
  - **Structural Features**   *Layout and Design, Infrastructure and Facilities*
- 

“The Wet Tropics Management Authority (WTMA) was established to manage the area to meet Government commitments under the World Heritage Convention which are specifically to protect, conserve, *present*, transmit to future generations, and rehabilitate the Wet Tropics WHA” (WTMA, 2000, pg.4). Presentation in the context of a World Heritage property and with respect to WTWHA visitor sites encompasses the significance and meaning of World Heritage status, the nature of the natural and cultural attributes as ‘heritage values’ for which an area has been listed, and the historical context of the site, including its natural history and history of human use, association and meaning. Presentation also encompasses a number of other management responsibilities, including maintenance, communication, site design, amenity provision, and identification of those authorities and agencies responsible for the management of the site. While many of these considerations are often subsumed under the term ‘interpretation’, the term presentation is used here along with subheadings to more directly address the specific mandate and multiple responsibilities of a World Heritage management authority.

### ● **Significance: *WHA Status, Natural and Cultural Attributes, Historical Context***

**WHA Status**                    The presentation of Murray Falls as a Wet Tropics World Heritage Area site (WTWHA) appears to be problematic. It is of concern that approximately 85 percent of respondents were not aware that the area had any special significance, and only 14 percent of respondents appeared to be aware that this site was a part of the WTWHA (Section 1 Visitor Survey pg 34-35). This is especially noteworthy in that 69.8 percent of visitors surveyed were Australian, and 68.8 percent of these Australian visitors were local residents (Section 1 Visitor Survey pg 20-21), who would be expected to be knowledgeable about the status of this area. It is also noteworthy given that this is a site that has two signs specifically identifying it as a WTWHA site, although both are at different locations along the access road (Section 2 Site Inventory pg 60-61).

**Natural and Cultural Attributes**                    A principal aspect of presentation of a WTWHA site is natural and cultural heritage interpretation. Murray Falls has a comprehensive selection of indigenous cultural heritage interpretation signs located along the rainforest/lookout walking track (Section 2 Site Inventory pg 62). While this signage did not receive as high a rating as the other information sources (Section 1 Visitor Survey pg 30-31), it nevertheless plays a critical role in enhancing visitor, and in particular local visitor, awareness of this most important WTWHA attribute. The actual involvement of indigenous people in a very visible and meaningful way in the management of this site and as guides for visitors (Section 1 Visitor Comments pg 44-45), would provide another important way of presenting both the historic and contemporary indigenous cultural heritage significance of Murray Falls. What natural interpretation material exists is embedded in the indigenous cultural interpretive signs and so highlights the interconnectedness and hence significance of both as WTWHA attributes.

**Historical Context**                    Another consideration with respect to significance of the site relates to its predominant use by local residents (Section 1 Visitor Survey pg 20-21). Interpretation material which addresses the post-contact history of the site is absent. Such historical information (e.g., changing land use, roads, initial protected area status) might well be of interest to both indigenous and nonindigenous local residents as well as visitors and may provide an additional way of encouraging visitor appreciation of human connectedness with country. Interpretation material could also include the history and significance of the WTWHA listing, and what this has meant to Murray Falls in terms of management and visitation, protection and preservation.

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## **Management Agency:** *Identity and Presence, Conservation and Protection*

**Identity & Presence** A related presentation issue was level of visitor and other user awareness of the management agency (ies) responsible for management of the site. It is a concern that 73 percent of visitors did not appear to know who the management agency responsible for Murray Falls was (Section 1 Visitor Survey pg 34-35). This is noteworthy given that this site attracts repeat visits from both local and domestic Australian visitors (Section 1 pg 22-23), and has signage that specifically identifies Department of Natural Resources and State Forestry as the management agencies (Section 2 Site Inventory pg 60-61). This lack of awareness and/or confusion amongst visitors has clear implications for the non reporting of critical incidents or damage, the provision of any type of feedback to managers, the public representation of agencies, and management performance monitoring.

**Conservation & Protection** Clearly visitors and other users appear to be impressed with the overall management of the Murray Falls site as indicated by direct and indirect item responses relating to their appraisal of the condition and management of the natural and built environments (Section 1 Visitor Survey pgs 26-27; 32-33). In addition, their perceptions of the quality/status of biophysical and structural indicators of impact (Section 1 Visitor Survey pg 38-39) were closely aligned with that of the researchers who had undertaken a comprehensive assessment at the site at the same time (Section 2 Site Inventory, pg 56-57; Wilson 2002). While there were some identifiable issues relating to the immediate natural environment such as weeds and other exotic plants, these nevertheless were being addressed (Wilson 2002). In terms of the built environment, a continuous maintenance program is well established.

## **Information** *Sources and Signage*

**Sources** Presentation of the WTWHA and the decision to visit sites such as Murray Falls is closely linked to and influenced by the way in which relevant information is accessed or sourced. Clearly the high local use of this site and the many repeat visitors would explain the lack of use of information sources such as information centres or web sites, etc and alternatively the high dependence on prior knowledge and/or word of mouth of this user group for information about Murray Falls (Section 1 Visitor Survey, pg 22-23). Given this, a carefully considered site-based information dissemination program needs to be adopted to insure that this important and substantial user group of the WTWHA has access to all relevant and critical information.

**Signage** Another important presentation issue and management responsibility at sites such as Murray Falls is the provision of signage that clearly identifies rules and regulations, safety issues, and directions. Here at Murray Falls such signage is evident throughout (Section 2 Sign Inventory pg 60-65). In addition, visitor appraisal of various aspects of such signage was moderately high (Section 1 Visitor Survey pg 30), and their overall condition was found to be good (Section 2 Sign Inventory pg 60-65). Nevertheless, given the history of accidents at Murray Falls there remains a concern for those 25 visitors who did not easily locate the safety information.

## **Structural Features** *Layout and Design, Infrastructure and Facilities*

**Layout and Design** The current site layout and design at Murray Falls appears to be legible, functional and sensible (Section 2 Site Inventory pg 56-57), and appears to mitigate potential use conflicts and distribute visitors over the site in a way which maximises choice and options. The historical reality of the site is that it reflects what was best practice for a DNR day use and camping site, and its continued functioning as such a site does not appear to be presenting any particular management problems under its current status as a WTWHA site. It is arguable that Murray Falls does present a number of excellent opportunities for expanding recreation and experience opportunities in its design and planning, and these would include increased local indigenous culture-based activities and experiences, an extended walking track, and modification of the site layout and interpretation to foster a more immediate, rewarding, and memorable 'encounter' with the natural environment of the WTWHA site. This however would have to be very carefully considered given the current wish by visitors that the site remains unchanged (Section 1 Visitor Comments pg 44).

**Infrastructure and Facilities** The infrastructure and facilities at Murray Falls appears to not only provide for most of the visitor needs but in addition are highly regarded as indicated by direct and indirect item responses relating to visitor appraisal of the adequacy, appeal, condition and management of the built environment (Section 1 Visitor Survey pgs 32-33). All facilities present are well used (Section 1 Visitor Survey pgs 32-33). The firewood supply is particularly well appreciated but there appears to be a problem with wood size. The lack of kindling wood results in the stripping of bark from nearby trees (Section 1 Behavioural Observations pg 52-53).



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## Opportunities

● **Recreational**

**Activity-based Opportunities**

● **Experiential**

**Experience-based Opportunities**

● **Educational**

**Knowledge-based Opportunities**

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Opportunities in the context of protected area visitor sites have traditionally been seen to encompass a spectrum of activity-based recreation outcomes within which experience-based opportunities have been embedded. Knowledge-based considerations have on the whole been absent. Here in this discussion this concept has been broadened to profile and highlight the importance of experience-based and knowledge-based opportunities in addition to activity-based opportunities at sites such as Murray Falls as separate but interlinked entities. The term opportunities along with the subheadings thus allow for a more direct linking of management considerations to specific needs of visitors in terms of opportunities sought, available and utilised.

● **Recreational**

*Activity-based*

**Activity-based** The activity-based recreational opportunities available at Murray Falls are largely those of a ‘State Forestry Park’ day use and overnight camping site, and include swimming, picnicing, a short walking track, and open grassed areas for other activities. The site does not cater for longer bush walks or wilderness adventure activities. The activities reported by respondents (Section 1 Visitor Survey pg 32-33) indicate that the site was providing for and facilitating those activities which most visitors were seeking in a reasonable way.

● **Experiential**

*Experience-based*

**Experience-based** Experience-based opportunities at Murray Falls include nature watching, relaxation, and contemplation, as well as the opportunity of encountering, experiencing, and appreciating the WTWHA. Such opportunities were identified by visitors as being the most important in terms of their reasons for visiting this site (Section 1 Visitor Survey pg 24-25), and were significantly more important than activity-based reasons. This strong endorsement of such opportunities and the general wish for no change in the site to occur (Section 1 Visitor Comments pg 44-45) supports the current management regime which clearly provides for such opportunities. Even though experiences such as solitude, ‘wilderness’ experience, and wildlife encounters are somewhat difficult to achieve at Murray Falls given its layout, extent, general character, and history and pattern of use, the site nevertheless appears to accommodate for current visitor needs. Other important experience-based opportunities that continue to attract visitors to this site and reflect the strong local use association are place connection, meaning, and identification and a keenness to share this with others, particularly children. All such experience-based opportunities clearly highlight the importance of this site to the sense of well being of those who visit.

● **Educational**

*Knowledge-based Opportunities*

**Knowledge-based** Knowledge-based opportunities at Murray Falls are numerous, diverse, and challenging. Such opportunities are clearly linked to the natural and cultural attributes of the site, as well as the human use and need for such places. The immediate availability and easy accessibility of a variety of forest and landscape types, the diversity of flora and fauna present, the indigenous cultural significance of the site and the management challenges associated with presenting, preserving and conserving such places provide endless knowledge-based opportunities. Such opportunities are rarely acknowledged as an important contributor to the spectrum of site level opportunities in protected and WHAs despite its public good, educational, management and international significance.

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**Crowding and Overuse**

It is also noteworthy that visitors expressed concerns over potential problems relating to too many visitors and overcrowding (Section 1 Visitor Survey pg 40-41). This again is an interesting response given that Murray Falls receives relatively low numbers of visitors (Section 3 pg 67), and that at the time of the survey respondents did not experience crowding (Section 1 Visitor Survey pg 36-37). It nevertheless highlights concerns visitors have regarding crowding and the importance of sites such as Murray Falls to remain predominantly local use, low visitation sites. It is at just such low use, and more tranquil sites, that increases in numbers are particularly salient as this changed social context and setting can dramatically alter the character of the site and ones experiences and opportunities while there.

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## References

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- Wilson, R. (2002) *Wet Tropics World Heritage Area Visitor Monitoring System*. Rainforest Cooperative Research Centre: Cairns. *In preparation*.
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## ***WTWHA Reports 2001/2002***

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The reports produced by the Rainforest CRC Project 4.1 research team for the 2001 and 2002 Wet Tropics World Heritage Area site surveys and the Wet Tropics World Heritage Area community survey are listed below.

### **WTWHA Site Level Data Reports:**

Bentrupperbäumer, J. M. (2002a) *Murray Falls: Site Level Data Report 2001/2002*. Rainforest Cooperative Research Centre: Cairns.

Bentrupperbäumer, J. M. (2002b) *Davies Creek: Site Level Data Report 2001/2002*. Rainforest Cooperative Research Centre: Cairns.

Bentrupperbäumer, J. M. (2002c) *Barron Falls: Site Level Data Report 2001/2002*. Rainforest Cooperative Research Centre: Cairns.

Bentrupperbäumer, J. M. (2002d) *The Crater: Site Level Data Report 2001/2002*. Rainforest Cooperative Research Centre: Cairns.

Bentrupperbäumer, J. M. (2002e) *Lake Barrine: Site Level Data Report 2001/2002*. Rainforest Cooperative Research Centre: Cairns.

Bentrupperbäumer, J. M. (2002f) *Marrdja: Site Level Data Report 2001/2002*. Rainforest Cooperative Research Centre: Cairns.

Bentrupperbäumer, J. M. (2002g) *Big Crystal: Site Level Data Report 2001/2002*. Rainforest Cooperative Research Centre: Cairns.

Bentrupperbäumer, J. M. (2002h) *Goldsborough: Site Level Data Report 2001/2002*. Rainforest Cooperative Research Centre: Cairns.

Bentrupperbäumer, J. M. (2002i) *Henrietta Creek: Site Level Data Report 2001/2002*. Rainforest Cooperative Research Centre: Cairns.

Bentrupperbäumer, J. M. (2002j) *Mossman Gorge: Site Level Data Report 2001/2002*. Rainforest Cooperative Research Centre: Cairns.

Bentrupperbäumer, J. M. & Reser, J.P. (2002a) *Measuring and Monitoring the Impacts of Visitation and Use in the Wet Tropics World Heritage Area: A Site Based Bioregional Perspective*. Rainforest Cooperative Research Centre: Cairns.

- Attachment: *Research Procedural Manual: Measuring and Monitoring the Impacts of Visitation and Use in the Wet Tropics World Heritage Area*. Rainforest Cooperative Research Centre: Cairns.

### **WTWHA Community Survey Reports:**

Bentrupperbäumer, J. M. & Reser, J.P. (2002b) *The Role of the Wet Tropics in the Life of the Community: A Wet Tropics World Heritage Area Community Survey 2001/2002*. Rainforest Cooperative Research Centre: Cairns.

- Attachment: *Research Procedural Manual: Wet Tropics World Heritage Area Community Survey 2001/2002*. Rainforest Cooperative Research Centre: Cairns.

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